6/1/00 - 01358

SWMU/IR SUMMARY
for
Naval Amphibious Base, Little Creek

June 2000

Prepared By:

NAB Little Creek

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INTRODUCTION

The purpose of this document was to summarize all available information for the 147 Solid Waste Management Units (SWMUs), 8 Areas of Concern (AOCs), and 17 Installation Restoration Sites at the Naval Amphibious Base, Little Creek. The SWMUs and AOCs were first identified during the first two phases of the RCRA Corrective Action process. The first phase, Preliminary Review (PR), represented a desk-top review of the file information from EPA Region III (including RCRA, CERCLA, Air, and Water information). The second phase, Visual Site Inspection (VSI), was conducted from June 27 – July 1, 1988 and focused on identifying SWMUs and collecting visual evidence of release. This work was completed by A.T. Kearney, Inc. and The Earth Technology Corp. under an EPA contract. The findings of the PR and the VSI were reported in the Phase II RCRA Facility Assessment Report (Draft RFA) in August 1988. The Draft RFA was revised according to EPA and Navy comments. The Revised Phase II RCRA Facility Assessment Report (Revised RFA) was completed in March 1989. As a result of the Draft RFA, the Navy attempted to clean some SWMUs, as stated in the January 23, 1989 letter included in the Revised RFA in the Addendum. The actions taken were most likely completed between September 1988 and January 1989.

The RCRA process was begun at NAB Little Creek because the Base had applied for a RCRA Part B Permit. On September 17, 1993, a Draft RCRA Permit (Draft Permit) was prepared by EPA. However, the Navy withdrew the application September 17, 1993 before it was complete, so the RCRA Corrective Action process was never completed. In 1993, NAB Little Creek completed an update and review of the SWMUs and AOCs. Some sites were visited and photos taken. Also, to facilitate Relative Risk Ranking (RRR) for budget purposes, 17 SWMUs were investigated through the LANTDIV CLEAN contract in October 1995. Soil and groundwater samples were collected for screening purposes. The results were not validated. Surface soil samples were generally collected from 12 to 18 inches below ground surface. Subsurface soil samples were taken from one to four feet below ground surface. The soil samples were collected using a direct push method, or in restricted access areas, hand augers were used. Groundwater samples were collected from temporary wells installed by direct push and made of 1" ID schedule 40 threaded flush joint PVC screen (0.010" slot) and riser. The wells were allowed to set overnight where possible. The groundwater samples were collected with a peristaltic pump at low flow and were not filtered. Photos of the sites and some sampling locations were taken. The following table lists the SWMUs that were investigated in 1995, the relative risk rank assigned (low, med, or high), and the renumbered SWMUs.

1995 Relative Risk Ranking Sampling

SWMU	Rank, Comment
16 Transformer Storage Area Old Pole Yard – Bldg 3664	Low
17 Small Transformer Storage Area – Building 3175	Med, Renumbered to SWMU 1
20 PWC Transportation Garage Salvage Parts Storage Area – Building 3661	Low
32 NEX (East Annex) Gas Station Battery Storage Area – Building 3615	Low
33 NEX (East Annex) Gas Station Satellite Accumulation	Low

Area – Building 3615	
84 Demolition Debris Landfill	High, IR Site 8
105 Steam Plant Flyash Silo – Building 757	High, Renumbered to SWMU 2
111 Pier 10 Sandblast Yard	High, Renumbered to SWMU 3
116 MWR Boat Maintenance Facility – Building 3021	Low
117 SBU2 Battery Storage Area – Building 103	Med, Renumbered to SWMU 4
119 Former SpecWar 2 Electronics Shop – Bldg W112	Low
120 VC-6 Satellite Accumulation Area – Building 2074	Low
128 Port Ops Lube Oil Dispensing Area – Building 3896	No sludge in storm drain to sample
129 Port Ops Satellite Accumulation Area – Building 3896	No sludge in storm drain to sample
130 Port Ops Boat Painting Area – Building 3896	Med, Renumbered to SWMU 5
131-133 Seabee Area – CB124	Med, Renumbered to SWMU 6
146 SEAL Team 2 Material Storage Area – Bldg 3813	Unit could not be located
137 Small Boats Sandblast Yard – not sampled in 1995	Renumbered to SWMU 7
144 West Annex Sandblasting Area – not sampled in 1995	Renumbered to SWMU 8

The findings and suggestions for further action from the Revised RFA, the conditions for the Draft Permit, the findings from the 1993 review, and the results from the 1995 RRR Sampling are summarized in this document. Desktop reviews of all available information were conducted by the NAB Little Creek Partnering Team in 1999 and 2000. Consensus for site status following Partnering Team review of available site information is also summarized in this document and reflects site status as developed for the NAB Little Creek Federal Facility Agreement (FFA). Recommendations in this document are based on all currently available information.

This document is organized into sections according to the recommendation for each SWMU. Section 1 includes SWMUs that were recommended for no further action in the Revised RFA. No conditions were set for these SWMUs in the Draft Permit. Sections 2 through 6 include SWMUs and AOCs that are regulated under other programs. These programs include Installation Restoration (IR); Underground Storage Tanks (UST); Spill Prevention, Control, and Countermeasures (SPCC) Plan/Aboveground Storage Tanks (AST); Hampton Roads Sanitation District (HRSD) Permit/Oil Water Separator (OWS); and the Virginia Pollutant Discharge Elimination System (VPDES) Permit. It is stated in both the draft Subpart S and the RFA guidance that it is not the EPA's position to include releases permitted under other environmental laws in the corrective action program. Therefore SWMUs in these sections were recommended for no further action under RCRA. Section 7 includes SWMUs that are proposed for no further action based on updated information or actions taken since the Revised RFA. Section 8 includes those SWMUs recommended for further investigation.

Photos are available from the Revised RFA, the 1993 summary, and the 1995 RRR Sampling event. Some digital photos are also available from 1999. The originals are available in NAB Little Creek's copy of this document.

A map with the location of all of the SWMUs and AOCs is presented as figure 1. In some cases, the exact location of the site could not be located, so an estimate is presented.

1 - NO FURTHER ACTION – RFA

The SWMUs with low/no potential for release and not requiring further action, as stated in the Revised RFA, are presented in this section. The basis for the no release determination was made on one of five criteria:

1 Located inside a building or under a roof with a concrete floor
2 No hazardous waste or hazardous constituents were managed by the unit
3 The unit has been removed and there is no evidence of release
4 The unit is in good condition
5 The unit is located in a contained area

As summarized in the introduction, NAB Little Creek had applied for a RCRA Part B Permit. EPA drafted a Permit on September 10, 1993. This document contains recommendations from the draft permit as a point of reference. A "waste characterization" was recommended by the draft permit for several SWMUs in this section. However, there is no current requirement to provide a waste characterization because NAB Little Creek withdrew the request for a RCRA Part B permit on September 17, 1993. On June 30, 1999, EPA and DEQ agreed that no further action was required for all SWMUs in this section (Partnering Team Meeting Minutes June 1999).

Old SWMU 1 Paint Shop Waterwall – Building 3165

Description: This paint shop waterwall is in one of three painting rooms located in Building 3165. Water cascades over the interior walls of the paint booth and collects overspray from the painting operations. The paint shop uses between 1,000 and 2,000 gallons of paint and solvent a year, a large percentage of which is used for spray painting. The paint shop reportedly used almost three times these quantities ten years ago.

Date of Start-Up: The paint shop has been in operation at this location since 1945. It is not known exactly when the waterwall paint booth began operation.

Date of Closure: There are no plans for closure of this unit.

Wastes Managed: Approximately 100 gallons per month of paint contaminated water are generated from painting operations. The wastes are stored adjacent to the shop and have been removed for the last seven years by an outside contractor. According to base personnel the paint contaminated water has been tested and was determined to be non-hazardous. Prior to 1977, the wastes were sent to the Amphibious Base Landfill (SWMU 123, IR Site 7).

A review of 27 months of PWC hazardous waste records for the 1980s indicates that 1,155 gallons of chromium paint and 120 gallons of other paints were removed as wastes. According to the Initial Assessment Study, 1984 (Ref. 1), this represents the house cleaning of materials on hand and generation of this quantity of waste would not be expected to be repeated.

Release Controls: The unit is designed to collect and contain the overspray from the painting

operations. The booth is located completely inside Building 3165 on a concrete floor of good integrity.

History of Releases: No releases from this unit have been identified in the files or were observed during the VSI. *References*: 1, 2

Comments: This SWMU is not addressed in the Draft Permit.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
1. Located inside a building or under roof with a concrete floor.

Old SWMUs 2-5 Wood Dust/ Chip Collection Bins

Description: A total of four wood dust/chip collection bins were identified facility-wide during the VSI. All bins are a waste management component of facility carpenter's shops. The carpenter's shops are responsible for performing building repairs, installing sheetrock, paneling offices, installing drop and tile ceilings, cutting glass, building cabinets and furniture, and repairing counter tops. All dust and chips from carpenter activities are pulled into these collection units, via vacuum systems.

SWMU	Building	Installation Date	Construction Material
2 PWC Carpentry Shop	3165	1945	Steel
3 PWC Training Service Carpentry Shop	3227	1954	Steel
4 Navy Maintenance Carpentry Shop	3334	Not Available	Wood
5 MWR Carpentry Shop	3530	Not Available	Steel

Date of Closure: There are no plans for closure of these units.

Wastes Managed: The units manage the waste dusts collected from carpenter operations. There is no evidence that these units manage hazardous waste or constituents.

Release Controls: SWMUs 2, 3, and 5 are constructed of steel. SWMU 4 is constructed of wood. All four units rest on concrete pads and are either surrounded by grass or asphalt. All units and pads appeared to be in good condition during the VSI.

History of Releases: No releases from these units have been identified in the files or were observed during the VSI. *References*: 1, 2

Comments: These SWMUs are not addressed in the Draft Permit.

Recommendations: The Revised RFA stated that these SWMUs are recommended for no further action for the following reason:
2. No hazardous waste or hazardous constituents managed

Old SWMU 6 NEX Maintenance Shop Spent Battery AA – Building 3334

Old SWMU 7 NEX Maintenance Shop Satellite Accumulation Area – Building 3334

Description: Maintenance for Navy Exchange facilities is performed through the exchange's maintenance group, located at Building 3334 (Figure 4), northwest of the 5th and B St intersection. Maintenance activities include carpentry, oil changes, air conditioning work, minor mechanical and electrical repairs, and cleaning. Several spent car batteries were stacked immediately outside of the shop. The satellite accumulation area consists of a metal cabinet inside the shop that holds several cans of waste paint, solvents, and pesticides.

Date of Start-Up: Building 3334 was used as the Automobile Hobby Shop for several years prior to its use as a maintenance facility. The Automotive Hobby Shop occupied Building 3334 from 1943 to 1974. (Presently housed in Building 3530, SWMUs 80-81)

Date of Closure: There are no plans for closure of these units.

Wastes Managed: The facility receives and stores spent batteries (SWMU 6) prior to pick-up by the PWC; during the VSI a metal tray containing lids with some oily material adhering to them were also noted in this area. The facility serves as a satellite accumulation area (SWMU 7) for a small quantity of paints, solvents and pesticides that are turned into the Navy Exchange Maintenance shop prior to pick-up by the PWC.

Release Controls: Batteries are stacked on concrete in the battery storage area (SWMU 6). The area is located outside the shop and the concrete appears to be in good condition. The lids were in a tray on the ground. The satellite accumulation area (SWMU 7) is located inside the shop on top of a small metal cabinet that rests on a concrete floor of good integrity.

History of Releases: No releases from these units were identified in the files or were observed during the VSI. *References*: 1, 2

Comments: These SWMUs are not addressed in the Draft Permit.

Recommendations: The Revised RFA stated that these SWMUs are recommended for no further action for the following reason:
1. Located inside a building or under roof with a concrete floor

SWMU 9 PWC Training Center Scrap Metal Dumpster – Building 3614

SWMU 10 PWC Sheet Metal Shop Scrap Metal Dumpster – Building 3165

Description: Shops separate scrap metal from the rest of the waste stream and dispose of it in these units. These units are representative of a larger number of scrap metal dumpsters

throughout the facility.

Date of Start-Up: The date of start-up for these units is not currently available.

Date of Closure: There are no plans for closure of these units.

Wastes Managed: Scrap metal is separated from the rest of the solid waste generated from shop operations and placed in these dumpsters. There is no evidence that SWMUs 9 or 10 manage hazardous waste or hazardous constituents.

Release Controls: The units are constructed of steel and are resting on concrete or asphalt surfaces of good integrity.

History of Releases: No releases from SWMU 9 or 10 have been identified at the present time.
References: 2

Comments: This SWMU was not addressed in the Draft Permit.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
2. No hazardous waste or hazardous constituents managed

SWMU 19 PWC Transportation Garage – Paint Booth Filters – Building 3661

Description: All PWC transportation maintenance is conducted at Building 3661. Paint booth filters are present in a forced air paint booth in Building 3661.

Date of Start-Up: The new transportation maintenance shop (Building 3661) was constructed in 1974.

Date of Closure: There are no plans for closure of these units.

Wastes Managed: Paint residue. The filters are picked up by PWC on a regular basis.

Release Controls: The paint booth filters (SWMU 19) are placed in the dumpster which are stored at the Amphibious Base Landfill (SWMU 123) before being hauled off-site to a privately-owned landfill.

History of Releases: No releases from the paint booth filter (SWMU 19) were observed.
References: 1, 2

Comments: The PWC Transportation Garage does not use lead paint. The Amphibious Base Landfill was used only as a staging area. Waste burial at the landfill ceased in 1979. This SWMU is not addressed in the Draft Permit.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
1. Located inside a building or under a roof with a concrete floor.

SWMU 22 PWC Transportation Garage – Wash Rack – Building 3661

Description: All PWC transportation maintenance is conducted at Building 3661. Water draining from the wash rack runs through an oil-water separator (SWMU 71).

Date of Start-Up: The new transportation maintenance shop (Building 3661) was constructed in 1974.

Date of Closure: There are no plans for closure of these units.

Wastes Managed: Oil and grease from the wash racks. These wastes are picked up by the PWC on a regular basis.

Release Controls: The concrete wash rack area is sloped toward a center drain. Water from the oil/water separator enters the sanitary sewer.

History of Releases: No releases were identified at the wash racks. *References*: 1, 2

Comments: The Draft Permit tentatively states that a waste characterization should be conducted. However, there is no current requirement to provide a waste characterization because NAB Little Creek withdrew the request for a RCRA Part B permit.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
4. Unit in good condition.

SWMU 29 Harbormaster's Office Area – Paint/Thinner Residue Tank – Bldg 3894

Description: The Harbormaster's Office is located in Building 3894. The Harbormaster is responsible for the direction of movement of ships in Little Creek Cove, Desert Cove, and Little Creek Channel. These operations produce waste materials from the maintenance of pusher boats. There are two 250-gallon tanks located adjacent to Building 3894 for liquid wastes. SWMU 29 is an above ground paint/thinner residue tank. It is elevated over gravel and soil. At the time of the VSI, the unit was not receiving wastes.

Date of Start-Up: According to the Initial Assessment Study of 1984, this tank was installed in 1954.

Date of Closure: According to the Navy's comments on the Draft RFA, the tank was drained and removed.

Wastes Managed: Paint and paint thinner residues are managed by the unit. According to the Initial Assessment Study, 1984, in the past, there have been approximately 100 gallons of waste generated per month.

Release Controls: This above ground steel tank is on a stand which rests directly on a gravel surface. There is no berming around the tank.

History of Releases: No releases from this unit have been identified in files or observed during the VSI. *References*: 1, 2

Comments: The Draft Permit tentatively states that a waste characterization should be conducted. However, there is no current requirement to provide a waste characterization because NAB Little Creek withdrew the request for a RCRA Part B permit.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
4. Unit in good condition.
On March 9, 1999, EPA and DEQ agreed that no further action was required for this SWMU(Partnering Team Meeting Minutes March 1999) .

SWMU 61 Harbormaster's Office Above Ground Used Oil Tanks – Building 3894

Description: 2, 250 gallon steel tanks installed in 1954. The tanks rest on a stand in good repair. NV? No releases were idenidentified for tor this SWMU.

Actions Taken: According to the Navy's comments on the Draft RFA, the tank was drained and removed.

Comments: The Draft Permit states that SWMUs 34 - 75 must have integrity testing. The statement in the Draft Permit was most likely in error. This SWMU is also covered under the SPCC Plan as an AST. Any further investigations or evaluations will be completed through that program.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reasons:
4. Unit in good condition.
5. Unit located in a contained area.
On March 9, 1999, EPA and DEQ agreed that no further action was required for this SWMU(Partnering Team Meeting Minutes March 1999) .

SWMU 62 CB210 ELCS Mechanic Shop Above Ground Used Oil Tank

Description: 200 gallon steel tank. The tank rests on a stand and concrete pad in good repair.

No releases were identified for this SWMU.

Comments: The Draft Permit states that SWMUs 34 - 75 must have integrity testing. The statement in the Draft Permit was most likely in error. This SWMU is also covered under the SPCC Plan as an AST. This tank is no longer in service. Any further investigations or evaluations will be completed through that program.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reasons:
4. Unit in good condition.
5. Unit located in a contained area.

SWMU 64 BMU-2 Maintenance Above Ground Waste Oil Tank – Building 3142

Description: 500 gallon steel tank. The tank rests on a stand and concrete pad with a berm and release valve in good repair. No releases were identified for this SWMU.

Comments: The Draft Permit states that SWMUs 34 - 75 must have integrity testing. The statement in the Draft Permit was most likely in error. This tank was replaced with a convult AST in October 1998. Soil sampling was completed as part of the replacement. This SWMU is also covered under the SPCC Plan as an AST. Any further investigations or evaluations will be completed through that program.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reasons:
4. Unit in good condition.
5. Unit located in a contained area.

SWMU 79 Navy Exchange Vending Office Scrap Yard – Building 3319

Description: Building 3319 presently houses the navy exchange vending office. From 1944 to 1954 the Public Works Department used the building for vehicle maintenance. A service bay in the building is still used for vehicle maintenance. The scrap yard was located behind the building on asphalt and grass and consisted of used equipment and scrap metal.

Date of Start-Up: The building became the navy exchange vending office in 1954. It is not known how long the scrap yard has been in use.

Date of Closure: According to the Navy's comments on the Draft RFA, all items were removed from this area and it is no longer used as a scrap yard.

Wastes Managed: The scrap yard contains various used metal equipment (e.g. ovens, cylinders, and wire) and other metal parts. There is no evidence that hazardous wastes or constituents were managed by this unit.

Release Controls: The scrap metal lies on and adjacent to the asphalt parking lot. The materials lie on wooden skids or directly on the ground.

History of Releases: During the VSI, no releases were observed at the scrap yard.
References: 1, 2

Comments: The Draft Permit tentatively states that a waste characterization should be conducted. However, there is no current requirement to provide a waste characterization because NAB Little Creek withdrew the request for a RCRA Part B permit.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
2. No hazardous waste or hazardous constituents managed.

SWMU 80 MWR Auto Hobby Shop Paint Booth Filters – Building 3530

Description: The auto hobby shop is presently located in Building 3530, between 5th and 3rd Streets. Prior to this shop the building was used for heavy duty equipment maintenance. The shop is accessible to base personnel to work on their motor vehicles. Oil changes, lubrication work, body work, and painting are common activities. A forced air paint booth is located in the auto hobby shop and waste paint filters are generated from this operation.

Date of Start-Up: In 1954, the heavy duty maintenance shop was constructed. The building became the auto hobby shop in 1974 when the transportation department relocated to its new building.

Date of Closure: Painting operations ceased at the Auto Hobby Shop in September 1996.

Wastes Managed: Paint filters from spray painting activities are managed at the unit.

Release Controls: Personnel at the unit mentioned that spent paint filters are thrown in the trash dumpster.

History of Releases: No releases from SWMU 80 were identified. *References*: 1,2

Comments: The Draft Permit tentatively states that a waste characterization should be conducted. However, there is no current requirement to provide a waste characterization because NAB Little Creek withdrew the request for a RCRA Part B permit.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
1. Located inside a building or under a roof with a concrete floor.

SWMU 82 Boone Clinic Medical X-Ray Silver Recovery Unit – Building 3505

SWMU 83 Boone Clinic Dental Clinic – Building 3505

Description: Boone Clinic is located in Building 3505 and houses both the Medical Clinic and Dental Clinic. Both clinics have X-ray facilities. X-ray films taken at the clinic are kept for five years by the Medical Clinic radiology department.

The Medical Clinic recovers silver from spent photographic processing baths (fixer) using an electrolytic recovery unit. According to base personnel, the pH of the unit effluent is tested with litmus paper. If the pH is found to be in the correct range for complete formation of silver hydroxides, it is assumed that the effluent does not contain silver. Recovered silver is collected by DRMO for resale.

The Dental Clinic stores spent photographic processing baths (fixer) in one gallon plastic containers. The spent baths are collected by the Naval Dental Clinic at the Norfolk Naval Base for silver recovery. Excess amalgam from filling teeth and x-ray film packets containing lead are also stored at the Dental Clinic. The amalgam contains mercury and is stored in small glass jars (about 25 ml) with a chelating agent. The film packets are collected in a cardboard box. The amalgam and the film packets are also collected by the Naval Dental Clinic at the Norfolk Naval Base for metal recovery.

Date of Start-Up: Startup information for these units is not available at this time.

Date of Closure: There are no plans for closure of these units.

Wastes Managed: Spent photographic processing baths containing silver, excess amalgam containing mercury, and x-ray film packets containing lead are managed at the Boone Clinic.

Release Controls: These units are located inside a building with a concrete subfloor.

History of Releases: No releases from the Boone Clinic were identified in the files or observed during the VSI. *References*: 1, 2

Recommendations: The Revised RFA stated that these SWMUs are recommended for no further action for the following reason:
1. Located inside a building or under a roof with a concrete floor.

SWMU 85 SIMA Machine Shop – Building 1265

Description: SIMA operates industrial shops in Building 1265. The shops are used to perform a variety of activities. In the Machine Shop machine cooling oil wastes are collected in small (about 5 gallon) containers which are collected by the PWC for disposal.

Date of Start-Up: Operation began after 1984.

Date of Closure: SIMA vacated Building 1265 by March 1998.

Wastes Managed: Wastes managed by the machine shop were spent machine coolants.

Release Controls: This unit is located inside a building with a concrete floor.

History of Releases: No releases from SWMU 85 were identified in the files or observed during the VSI. *References*: 2

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
1. Located inside a building or under a roof with a concrete floor.

SWMU 86 SIMA Grind Shop – Building 1265

Description: SIMA operates industrial shops in Building 1265. The shops are used to perform a variety of activities. The Grind Shop completes small-scale electroplating activities. Wastes are collected in plastic bottles with a capacity of about a quart. The containers are collected by the PWC for disposal.

Date of Start-Up: Operation began after 1984.

Date of Closure: SIMA vacated Building 1265 by March 1998.

Wastes Managed: Wastes managed by the Grind Shop were spent electroplating solutions.

Release Controls: This unit was located inside a building with a concrete floor.

History of Releases: No releases from SWMU 86 were identified in the files or observed during the VSI. *References*: 2

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
1. Located inside a building or under a roof with a concrete floor.

SWMU 87 SIMA Rewind Shop – Building 1265

Description: SIMA operates industrial shops in Building 1265. The shops are used to perform a variety of activities. The Rewind Shop completes small-scale electroplating activities. Wastes are collected in a 600 gallon underground storage tank. Wastes from SWMU 89 are also collected in this tank. No additional information was available about the tank.

Date of Start-Up: Operation began after 1984.

Date of Closure: SIMA vacated Building 1265 by March 1998.

Wastes Managed: Wastes managed include spent nickel and copper electroplating solutions and fluoroboric acid etching solutions.

Release Controls: This unit was located inside a building with a concrete floor. The underground storage tank associated with SWMU 87 (rewind shop) and SWMU 89 (carpentry shop) is equipped with a gauge.

History of Releases: No releases from SWMU 87 were identified in the files or observed during the VSI. *References*: 2

Comments: The Draft Permit tentatively states that a waste characterization should be conducted. However, there is no current requirement to provide a waste characterization because NAB Little Creek withdrew the request for a RCRA Part B permit.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
1. Located inside a building or under a roof with a concrete floor.

SWMU 88 SIMA Mechanical Calibration Laboratory – Building 1265

Description: SIMA operates industrial shops in Building 1265. The shops are used to perform a variety of activities. The Mechanical Calibration Laboratory calibrates mechanical equipment.

Date of Start-Up: Operation began after 1984.

Date of Closure: SIMA vacated Building 1265 by March 1998.

Wastes Managed: Wastes managed by the Mechanical Calibration Laboratory included mercury contaminated thermocouples and waste freon.

Release Controls: This unit was located inside a building with a concrete floor.

History of Releases: No releases from SWMU 88 were identified in the files or observed during he VSI. *References*: 2

Comments: The Draft Permit tentatively states that a waste characterization should be conducted. Additionally, it states that the fate of the waste at this unit should be determined. However, there is no current requirement to provide a waste characterization because NAB Little Creek withdrew the request for a RCRA Part B permit.

According to Navy personnel, the mercury thermocouples were collected in 5 gallon buckets and turned into PWC for proper disposal. The empty freon containers were recycled as scrap metal.

Some freon-contaminated rags and freon-contaminated oil may also have been turned into PWC for proper disposal.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
1. Located inside a building or under a roof with a concrete floor.

SWMU 89 SIMA Carpentry Shop – Building 1265

Description: SIMA operates industrial shops in Building 1265. The shops are used to perform a variety of activities. At the Carpentry Shop woodworking and painting activities were performed. Wood chips and dust are collected in a hopper connected to the ventilation system. A waterwall spray paint booth is used for painting. Sludge and skimmings from the waterwall are collected in a 55-gallon drum. The water drains to the underground holding tank associated with SWMU 87.

Date of Start-Up: Operation began after 1984.

Date of Closure: SIMA vacated Building 1265 by March 1998.

Wastes Managed: Wastes managed by the Carpentry Shop include wood chips and painting wastes.

Release Controls: This unit was located inside a building with a concrete floor. The underground storage tank associated with SWMU 87 (rewind shop) and SWMU 89 (carpentry shop) is equipped with a gauge.

History of Releases: No releases from SWMU 89 were identified in the files or observed during the VSI. *References*: 2

Comments: The Draft Permit tentatively states that a waste characterization should be conducted. However, there is no current requirement to provide a waste characterization because NAB Little Creek withdrew the request for a RCRA Part B permit.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
1. Located inside a building or under a roof with a concrete floor.

SWMU 90 SIMA Boat Shop Storage Yard Satellite Accum. Area – Bldg 1265

Description: SIMA operates industrial shops in Building 1265. The shops are used to perform a variety of activities. The Boat Shop Storage Yard Satellite Accumulation Area was located in front of Building 1265. Painting wastes were collected in a 55 gallon drum which stands on a wooden pallet over gravel.

Date of Start-Up: Unavailable.

Date of Closure: SIMA vacated Building 1265 by March 1998.

Wastes Managed: Wastes managed the Boat Shop Storage Yard Satellite Accumulation Area include painting wastes.

Release Controls: No release controls were identified for the boat shop storage yard satellite accumulation area.

History of Releases: Stains at the boat shop storage yard satellite accumulation area indicate a release to the soil has occurred. *References*: 2

Comments: The Draft Permit tentatively states that a waste characterization should be conducted. Additionally it states that spill evaluations should be conducted. However, there is no current requirement to provide a waste characterization because NAB Little Creek withdrew the request for a RCRA Part B permit.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
1. Located inside a building or under a roof with a concrete floor.

Although the description and recommendation in the RFA were contradictory, the location of the site could not be determined after a site visit. Areas surrounding the building are covered with asphalt and concrete. Digital pictures are available. On June 30, 1999, EPA and DEQ agreed no further action was required for this SWMU (Partnering Team Meeting Minutes June 1999) .

SWMU 91 SIMA Cable Rigger Shop Storage Satellite Accum. Area – Bldg 1265

Description: SIMA operates industrial shops in Building 1265. The shops are used to perform a variety of activities. The Cable Rigger Shop Satellite Accumulation Area was in Building 1131. Waste TCE from degreasing operations was collected in a 55 gallon drum located inside Building 1131 on a concrete floor.

Date of Start-Up: Unavailable.

Date of Closure: SIMA vacated Building 1265 by March 1998.

Wastes Managed: Wastes managed by the Cable Rigger Shop Satellite Accumulation Area included waste TCE.

Release Controls: This unit was located inside a building with a concrete floor.

History of Releases: No releases from SWMU 91 were identified in the files or observed during

the VSI. *References*: 2

Comments: The Draft Permit tentatively states that a waste characterization should be conducted. However, there is no current requirement to provide a waste characterization because NAB Little Creek withdrew the request for a RCRA Part B permit.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
1. Located inside a building or under a roof with a concrete floor.

SWMUs 92 - 95 CB301 Seabee Vehicle Maintenance Facility

Description: The Seabees operate two vehicle maintenance shops in Building CB301; a "light shop" and a "heavy shop." The light shop is used for automotive maintenance. The heavy shop is used for construction equipment maintenance.
- SWMU 37 - Two 550-gallon waste oil underground storage tanks (described in Section 3)
- SWMUs 67-68 - Oil-water separators associated with vehicle wash racks (described in Section 5)
- SWMU 92 - Satellite Accumulation Area. This unit consists of small containers of painting wastes inside a metal locker in the scrap storage area (SWMU 96).
- SWMU 93 - Battery Storage Area. Drained battery carcasses are stored on a wooden pallet outside the entrance to the heavy shop over a concrete slab.
- SWMU 94 - Battery Shop. Lead-acid batteries are drained in this shop. The acid is collected in a 55-gallon drum and held until it is removed by the PWC for disposal.
- SWMU 95 - Paint Booth Filters. The filters are used in a forced air paint booth to collect paint particles. The spent filters are collected by the PWC for disposal.

Date of Start-Up: The SWMUs in this area went into operation after 1984.

Date of Closure: There are no plans for closure of these units.

Wastes Managed: Wastes managed at the Seabee Vehicle Maintenance Facility include:
- SWMU 92 (Satellite Accumulation Area) – small quantities of painting wastes
- SWMU 93 (Battery Storage Area) - drained lead-acid automotive batteries
- SWMU 94 (Battery Shop) - sulfuric acid drained from lead-acid automotive batteries
- SWMU 95 (Paint Booth Filters) - paint particles

Release Controls: The following release controls were identified for the Seabee Vehicle Maintenance Facility:
- SWMU 92 (Satellite Accumulation Area) - wastes are collected in small containers which are placed inside a metal locker with a metal lip approximately 3 inches deep.
- SWMU 93 (Battery Storage Area) - drained batteries are placed on a wooden pallet over a concrete slab.
- SWMU 94 (Battery Shop) - this unit is located inside a building with a concrete floor.
- SWMU 95 (Paint Booth Filters) - the filters are allowed to dry prior to collection by the

PWC.

History of Releases: No releases were identified in the files or observed during the VSI for SWMUs 92, 93, 94, and 95. *References*: 1, 2

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
1. Located inside a building or under a roof with a concrete floor.

SWMU 99 Solid Waste Incinerator Site

Description: This unit is bounded by Helicopter Road to the west, 10th Street to the south, and Hewitt Drive to the east. The Incinerator has been demolished. A picnic/lookout/ veranda facility has been constructed at the site. During its operation, the unit was used to incinerate municipal refuse generated at the Naval Amphibious Base.

Date of Start-Up: Intermittent operation of this unit began in 1955.

Date of Closure: Operation of this unit ended in ?1957?

Wastes Managed: Municipal refuse generated at the Naval Amphibious Base was incinerated in this unit.

Release Controls: No release controls were identified for this unit.

History of Releases: Air emissions from this unit occurred in the past. No other releases were identified. *References*: 2

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
3. Unit removed and no evidence of release.

SWMU 100 Fuel Farm Loading Platform Underground Storage Tank – Bldg 3867

Description: The fuel farm is adjacent to Desert Cove. The loading platform is used to fill tank trucks with fuel from above-ground fuel tanks at the fuel farm. The loading platform is downslope from the fuel tanks, and consists of valves, piping, and associated equipment for dispensing fuel. The platform base is constructed of concrete and is visibly stained. The fuel farm loading platform storm water drain is located between the loading platform and the bay and is connected to an underground storage tank (SWMU 100). Two above-ground waste oil tanks (SWMU 63) are also associated with SWMU 100.

Date of Start-Up: Start-up information for this SWMU is not available at this time.

Date of Closure: There are no plans to close this unit.

Wastes Managed: This unit manages storm water runoff from the fuel farm loading platform. Fuels from the area also enter this drain.

Release Controls: The unit is contained with a sloped concrete surface of good integrity.

History of Releases: No releases have been identified or observed at the present time.
References: 1, 2

Comments: The Draft Permit tentatively states that a waste characterization should be conducted. Additionally it states that a leak test should be conducted. However, there is no current requirement to provide a waste characterization because NAB Little Creek withdrew the request for a RCRA Part B permit. This SWMU is covered under the UST Program. Any further investigations or evaluations necessary will be completed within that program.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
4. Unit in good condition
5. Unit in contained area
Also, this SWMU is covered under the UST Program. Any action required will be completed under that program.

SWMU 103 Stationary Crane Area – Piers 10-11

Description: Piers 11 - 19 are located along Little Creek Cove. Navy vessels are serviced in this area. Service activities include loading and unloading cargo, supplies, and fuel. Utility services are provided to vessels moored at the piers. The stationary crane area is located between Piers 10 and 11. The Crane has been removed. The area is now used to store scrap, including spent batteries, cable, and scrap metal.

Date of Start-Up: Start-up information for this unit is not available at this time.

Date of Closure: The stationary crane was removed from the area.

Wastes Managed: The stationary crane area is used to store scrap metal, cables, and discarded equipment. It is assumed that the batteries contain lead and sulfuric acid.

Release Controls: No release controls were identified for SWMU 103.

History of Releases: No releases from SWMU 103 were identified in the files or observed during the VSI. *References*: 1, 2

Comments: The Draft Permit tentatively states that a waste characterization should be conducted. However, there is no current requirement to provide a waste characterization because NAB Little

Creek withdrew the request for a RCRA Part B permit.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
3. Unit removed and no evidence of release

SWMU 104 Steam Plant Baghouses (3) – Building 757

Description: The steam plant is housed in Building 757 between Murray Road and Amphibious Drive. The plant has provided steam heat to NAB since 1956. From 1956 to 1969 the steam plant burned approximately 40,000 to 45,000 tons of coal per year. In 1969, the plant switched to Burning No. 6 diesel oil (approximately 6 million gallons/ year). The plant switched back to coal in 1983. Three baghouses at the steam plant are used to remove particulates (flyash) from gases leaving the plant.

Date of Start-Up: Operation of the steam plant began in 1956.

Date of Closure: The steam plant will be phased over to natural gas within the next five years.

W Wastes Managed: Flyash

Release Controls: The baghouse filters are enclosed and operate in a vacuum.

History of Releases: No releases from this unit were identified. *References*: 1, 2

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
4. Unit in good condition.

SWMU 106 Steam Plant French Drain – Building 757

Description: The steam plant is housed in Building 757 between Murray Road and Amphibious Drive. The plant has provided steam heat to NAB since 1956. From 1956 to 1969 the steam plant burned approximately 40,000 to 45,000 tons of coal per year. In 1969, the plant switched to Burning No. 6 diesel oil (approximately 6 million gallons/ year). The plant switched back to coal in 1983. Flyash is removed through a duct at the bottom of the flyash silo (SWMU 105) to a truck parked over a concrete slab with a french drain (SWMU 106) beneath the flyash silo (SWMU 105). The french drain (SWMU 106) is approximately 3 feet deep, two feet wide, and 20 feet long. It is constructed of concrete with a metal grate covering. The french drain (SWMU 106) receives wash water laden with flyash from the adjacent concrete slab. The french drain (SWMU 106) is connected to the coal pile leachate collection system (SWMU 107).

Date of Start-Up: Operation of the steam plant began in 1956.

Date of Closure: The steam plant will be phased over to natural gas within the next five years.

Wastes Managed: Flyash laden wash water.

Release Controls: The french drain (SWMU 106) is connected to the coal pile leachate collection system (SWMU 107).

History of Releases: No releases from this unit were identified. *References*: 1, 2

Comments: This SWMU is also covered under the HRSD Permit.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
4. Unit in good condition.

SWMU 107 Steam Plant Coal Pile Leachate Collection System – Building 757

Description: The steam plant is housed in Building 757 between Murray Road and Amphibious Drive. The plant has provided steam heat to NAB since 1956. From 1956 to 1969 the steam plant burned approximately 40,000 to 45,000 tons of coal per year. In 1969, the plant switched to Burning No. 6 diesel oil (approximately 6 million gallons/ year). The plant switched back to coal in 1983. In addition to wash water from the french drain (SWMU 106), the coal pile leachate collection system (SWMU 107) receives leachate from the plant coal pile. The liquids enter a concrete basin. The basin has two compartments. The liquid may be directed to either basin compartment. It is then pumped out of the basin to a mixing tank (there is one mixing tank for each basin compartment) where caustic soda is added to adjust the pH of the leachate. The neutralized liquid is then returned to the basin. The pH of the liquid is tested. The liquid is also tested for metals and suspended solids. Solids can be precipitated from the liquid if they are too high. If the liquid passes all required tests, it is discharged to the Hampton Roads Sanitation District POTW. Sludge from the basins is disposed off-site by a contractor.

Date of Start-Up: Operation of the steam plant began in 1956.

Date of Closure: The steam plant will be phased over to natural gas within the next five years.

Wastes Managed: Leachate from the coal pile and flyash laden wash water from the french drain. Sludge from the basins is considered a hazardous waste due to corrosivity (DO02).

Release Controls: The collection basin is constructed of concrete and is divided into two compartments; if one compartment fails, liquid can be directed to the other compartment.

History of Releases: No releases from this unit were identified. *References*: 1, 2

Comments: The Draft Permit tentatively states that a waste characterization should be conducted. However, there is no current requirement to provide a waste characterization because NAB Little

Creek withdrew the request for a RCRA Part B permit. This SWMU is also covered under the HRSD Permit.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
4. Unit in good condition.

SWMU 110 90-Day Accumulation Area – Building 106

Description: The 90-Day accumulation area includes two bays in Building 106 and an outdoor storage yard next to Building 106. The facility is used as a central staging area for hazardous waste generated throughout NAB. The two bays inside Building 106 are used to store waste containers with a volume less than 55 gallons. The bays have concrete floors and cinderblock walls approximately five feet in height. The outdoor yard is used to store wastes in 55-gallon drums on pallets. Spent batteries are stored in the yard on pallets. Most of the yard is paved with concrete. The yard is surrounded by a 6 inch asphalt berm. Wastes stored in the bays and the yard are segregated by type. Empty drums are stored between the back of Building 106 and the perimeter fence.

Date of Start-Up: Start-up for this unit was 1984.

Date of Closure: There are no plans to close this facility in the near future.

Wastes Managed: Hazardous wastes generated throughout NAB are stored here. Waste types include flammable (DO01), corrosive (DO02), oxidizer, reactive (DO03), and spenspent lead-acid batteries. Liquid and solid wastes are stored in this unit. Typical wastes sent to this unit are the same as SWMU 76 received.

Release Controls: Most of the outdoor yard is paved with concrete. The storm water drain for the yard is equipped with a manual valve which was in the closed position during the VSI. The building and the yard are surrounded by a six inch asphalt berm. The building has a concrete floor and a roof. For ventilation purposes, the roof does not meet the bay walls.

History of Releases: Stains on the floor of Building 106 indicate that spills have occurred in the bays. However, the concrete floor is in good condition and there is no evidence of releases from the building. During the VSI, one leaking battery was observed in the outdoor yard. There are some stains on the yard pavement, indicating wastes have been spilled. The yard pavement has some surficial cracks and there are seams in the pavement. However, no releases from the yard were identified. *References*: 2, 11

Comments: The Draft Permit tentatively states that a waste characterization should be conducted. Additionally it states that spill evaluations should be conducted. However, there is no current requirement to provide a waste characterization because NAB Little Creek withdrew the request for a RCRA Part B permit. Although this area is not covered under a specific permit, official closure under RCRA is required if the area's use ever changes.

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
4. Unit in good condition.
5. Unit located in contained area.

SWMU 121 Landing Force Trng Cmnd Satellite Accumulation Area – Bldg 3532

Description: This unit is located in Building 3532. It is an accumulation area for spent magnesium batteries. The spent batteries are stored in a refrigerator prior to removal by PWC for off-site disposal.

Date of Start-Up: Start-up information for this unit is not available at this time.

Date of Closure: There are no plans to close this unit.

Wastes Managed: Spent magnesium batteries are stored at this unit.

Release Controls: The refrigerator is used for storage located inside a building with a concrete floor.

History of Releases: No releases from this unit were identified in the files or observed during the VSI. *References*: 2

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
1. Located inside a building or under a roof with a concrete floor.

SWMU 140 SEAL Team 4 Spent Battery Staging Area – Building 3806

Description: This area is used to maintain and store boats, weapons, and other material used by Seal Team 4. The spent battery staging area is located inside Building 3806. Spent potassium hydroxide silver/zinc batteries are crated here prior to turn-it to the PWC.

Date of Start-Up: Start-up information for this SWMU is not available at this time.

Date of Closure: At the present time, there are no plans to close this unit.

Wastes Managed: Spent potassium hydroxide/sliver/zinc batteries are managed at the battery staging area.

Release Controls: The spent battery staging area is inside a building with a concrete floor of good integrity.

History of Releases: No releases from the spent battery staging area were identified.
References: 1

Recommendations: The Revised RFA stated that this SWMU is recommended for no further action for the following reason:
1. Located inside a building or under a roof with a concrete floor.

2 - INSTALLATION RESTORATION PROGRAM

Some SWMUs were identified as IR Sites in the IAS, 1984 (Ref. 1) and are recommended for continuing evaluation within the IR Program. However, other SWMUs are recommended to retain the SWMU number because investigations have already begun and appear in the budget as SWMUs. The following table provides a cross reference between SWMU and IR sites. If the SWMU is not included in this section (2), the section number appears after the IR site name. Two IR sites were not identified as SWMUs. Summaries and recommendations for those sites are included at the end of this section.

SWMU and IR Site Cross Reference

SWMU	IR Site
SWMU 14 PWC Wash Rack – Building 3165	Site 13 PWC PCP Dip Tank and Wash Rack
SWMU 15 PWC PCP Dip Tank – Bldg 3165	Site 13 PWC PCP Dip Tank and Wash Rack
SWMU 16 Transformer Storage Area – Old Pole Yard – Building 3664	Site 14 Transformer Storage Areas
SWMU 17/1 Small Transformer Storage Area – Building 3175	Site 14 Transformer Storage Areas
SWMU 24 Driving Range Landfill	Site 9 Driving Range Landfill
SWMU 25 Sewage Treatment Plant Landfill – Desert Cove Landfill	Site 10 Sewage Treatment Plant Landfill
SWMU 26 Sewage Treatment Plant Landfill – South of Desert Cove Landfill	Site 10 Sewage Treatment Plant Landfill
SWMU 27 Former School of Music Plating Shop – Building 3651	Site 11 School of Music Plating Shop
SWMU 28 Former School of Music Shop Neutralization Tank – Building 3651	Site 11 School of Music Plating Shop
SWMU 77 NEX Laundry Disposal Area	Site 12 Exchange Laundry Disposal Area
SWMU 84 Demolition Debris Landfill	Site 8 Demolition Debris Landfill
SWMU 102 W. Annex Fuel Leak - Piers 11-19	Site 3 West Annex Fuel Spill
SWMU 113 Motor Disposal Area – Bldg 1256	Site 17 Building 1256 Motor Oil Disposal Area
SWMU 117/4 SBU2 Battery Storage Area – Building 103	Site 6 Building 5 Battery Acid Disposal Area (Section 8)
SWMU 118 Special Boat Unit Yard – Buildings T-9, T-10, T-11	Site 5 Motor Oil Disposal Area Buildings T-9 – T-11
SWMUs 123-126 Amphibious Base Landfill	Site 7 Amphibious Base Landfill
SWMUs 111/3, 137/7, 144/8 Sandblast Areas	Site 2 Sandblast Disposal Areas (Section 8)
AOC A PCB Capacitor Spill – Fire Station 1	Site 15 Fire Station PCB Spill
AOC B PCB Capacitor Spill – Pole #425	Site 16 Pole 425 PCB Capacitor Spill
No Corresponding SWMU	Site 1 Building 1231 Oil Disposal Area
No Corresponding SWMU	Site 4 Reserve Center Motor Oil Disposal Area

SWMU 14 (IR Site 13) PWC Wash Rack – Building 3165

SWMU 15 (IR Site 13) PWC PCP Dip Tank – Building 3165

Description: The PWC sheet metal shop maintains a wash rack (SWMU 14) outside Building 3165D. The wash rack has a drain that leads to an underground oil/water separator (SWMU 70), located under the paved apron in front of the wash rack. The maintenance history of the oil/water separator is unknown. Steam and chemical cleaners were used for cleaning parts of vehicles, dumpster bodies, and other metal objects that are maintained by the sheet metal, welding, and machine shops. Other PWC shops may use this wash rack from time to time, but a record of frequency or extent does not exist.

A 300 to 400 gallon dip tank (SWMU 15) containing Pentachlorophenol (PCP) was located behind Building 3165E, immediately north of the wash rack area. The tank area is currently undergoing remedial activities under the IR Program (Site 13). The tank was used by the former wharf building shop (SWMU 12) from the early 1960s until 1974. Wood was dipped into the tank for treatment and set on racks in the surrounding yard for drying.

Date of Start-Up: A wash rack (SWMU 14) was originally installed in 1945. The good condition of the wash rack suggests it may have been replaced one or more times since 1945. The PCP dip tank (SWMU 15) became operational in the early 1960s.

Date of Closure: There are no plans for closure of the wash rack (SWMU 14). The PCP dip tank was taken out of operation and removed in 1975. It was then dismantled in 1982 and removed to Camp Allen as salvage (SWMU 15).

Wastes Managed: Pentachlorophenol, kerosene, tar, paint, and solvents were present in the PCP dip tank. Pentachlorophenol is an EPA listed hazardous waste, number U242.

Release Controls: The wash rack is a concrete pad of good integrity with bermed sides and deck drain in the center. The drain leads to an underground oil/water separator (SWMU 70) located under the paved apron in front of the wash rack.

The oil from the oil/water separator is removed by a vacuum truck, placed on a barge and taken to Craney Island Fuel Facility. The treated water is released into the sanitary sewer.

The PCP Dip Tank was originally cleaned out every six months. Typical volumes of sludge removed were 55 gallons per year. However, near the end of service, the tank received very little maintenance. All solution was removed and disposed in 1975. Shop personnel are unaware of the used PCP disposal location. The sludge was likely disposed in the Amphibious Base Landfill (SWMU 123) as were most other wastes prior to its closure in 1979.

History of Releases: The grounds of the area between the wash rack and the former location of the PCP dip tank had oily stains during the VSI.

The PWC PCP dip tank and wash rack fall under the IR Program (Site 13). As a part of this program, soil borings were drilled, monitoring wells were installed, and sampling was performed. A Soil Removal Action was completed in April, 1999. An in-situ groundwater remediation method is currently being investigated. *References*: 1, 2

Comments: The Revised RFA stated that the facility was conducting a soil and groundwater remedial investigation as part of the NACIP Program. No additional action was suggested beyond the scope of the study at the present time. The Draft Permit states that this SWMU shall be included in the VI along with the sampling and analysis that were used and the results.

Recommendations: Recommend no further action for these SWMUs due to their status as a CERCLA IR Site receiving investigation. All required actions will be completed within the IR Program.
On August 10, 1999, EPA and DEQ agreed that no further action for site screening was required for these SWMUs. In January 2000, the EPA, DEQ, and the Navy identified the site for reference in the FFA for Work to be Preformed (Section X) and in the Findings of Fact (Section IV).

SWMU 16 (IR Site 14) Transformer Storage Area - Old Pole Yard – Building 3664

Description: The old pole yard (across 7th Street from the Public Works compound) is surrounded by a chain linked fence and has been used to store large, PCB-containing transformers, vehicles, and equipment. A section of the old pole yard, approximately 150 feet by 15 feet was used to store the transformers. Since 1975, these transformers have been phased out of use on the base. During the VSI, at least 12 labeled PCB transformers stored in the old pole yard were awaiting pickup by the PWC and disposal through the DPDO. Eleven rusted 55-gallon drums were also present at the site. The drums were stored on a rack and were on their side.

Date of Start-Up: The old pole yard has been used to store large PCB transformers since at least 1953.

Date of Closure: According to the Navy's comments on the Draft RFA, the Old Pole Yard was closed in October 1988.

Wastes Managed: The unit was used to store PCB-containing transformers, non-PCB transformers, drums with unknown contents (presumably some type of oil), and used vehicles and equipment.

Release Controls: The transformers and drums are stored on asphalt. Some of the asphalt was cracked during the VSI. No curbing or diking was present.

History of Releases: According to the Initial Assessment Study, 1984, it is estimated that less than one gallon of PCB fluids may have leaked in this area. Oil stains were observed on the grass edges of the asphalt surface during the VSI. *References*: 1, 2

Actions Taken: This SWMU was included in the IR Program (Site 14) and was recommended for

no further action in the IAS:

> "Soil samples were collected in the transformer storage area to evaluate if there was any leakage in 1983 by the Public Works Department at NAB Little Creek. No detectable concentration of PCB was found in any of the soil samples collected. Thus the PCBs are contained in the transformer cases to this time. No confirmation study is recommended."

According to the Navy's comments on the Draft RFA, PCB, PCB-containing transformers, and those undergoing analysis were moved to Building 110 - the PCB storage building in the PWC Hazardous Waste Area (SWMU 110). All non-PCB transformers have been moved to a fenced, secured, asphalt area adjacent to building 3175 (SWMU 17). Drums of virgin oil shown in the photo have also been moved to this area. All stains have been removed from the asphalt in the Old Pole Yard. The drum rack has also been removed.

From October 25-31, 1995 this site was sampled for Relative Risk Ranking using DOD's model. Three surface soil and one groundwater sample were collected and analyzed for SVOCs and Pest/PCBs. See the figure for SWMU and sampling locations. The following table lists the compounds detected. As a result of the sampling, the site was ranked with a medium relative risk. However, due to the simplistic "sreening" method of DOD Relative Risk Ranking model, almost any contamination with the potential for exposure and transport will trigger a medium risk, regardless of the concentration of contamination.

z..)V)J M	1995 Relative Risk Ranking Sampling Results				
SWMU 16 (µg/kg, µg/L)	LC01-S1	LC01-S2	LC01-S3	LC01-W1	Res. Soil RBC
SEMIVOLATILES					
Di-n-butylphthalate	ND	62 JB	110 J	ND	780000*
Pyrene	ND	ND	14 J	ND	230000*
Benzo(a)pyrene	ND	ND	29 J	ND	87
Benzo(g,h,i)perylene	ND	ND	56 J	ND	NA
PESTICES/PCBs					
Endosulfan 1	ND	ND	ND	0.079 P	47000*
4,4'-DDE	0.22 JP	ND	0.48 J	ND	1900
4,4'-DDD	0.21 JP	ND	ND	0.15 P	2700
4,4'-DDT	0.32 JP	ND	0.78 JP	ND	1900
Alpha-Chlordane	0.15 JP	ND	ND	ND	1800
Gamma-Chlordane	0.13 J	ND	ND	ND	1800
Aroclor-1260	15 J	ND	ND	ND	320

*Residential Soil RBC/10 for non-carcinogens

Comments: The Revised RFA recommended that surface and shallow subsurface soil sampling be conducted to determine if releases of hazardous constituents have occurred. An appropriate spacing system should be constructed on the perimeter soils of the paved areas. At least one surface and subsurface soil sample should be collected from each spaced section. The samples should be analyzed for PCBs and Semi-Volatiles. The Draft Permit states that soil samples should be collected and analyzed for PCBs and Semi-Volatiles.

Recommendations: Recommend no further action for this SWMU due to the actions taken in 1988 and the sampling results from 1983 and 1995. Of the three soil samples and one

groundwater sample, only one contained PCBs at 0.015 ppm, well below the 1 ppm action level for residential areas. The other compounds listed were below regulatory standards.
On August 10, 1999, EPA, DEQ, and the Navy discussed this site. More sampling may be required in the vicinity of the drum storage area. Sampling parameters will need to be defined, due to the unknown contents of the drums. More discussion is required for this SWMU. Clarification of regulatory standards or action levels for PCBs is required before a final decision can be made. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000) .

SWMU 17/1 (IR Site 14) Small Transformer Storage Area – Building 3175

Description: The paved yard in the Public Works Center compound immediately west of Building 3175 was used in the past as a storage yard for small transformers that reportedly do not contain PCBs. The area has an asphalt pad that was surrounded by a locked fence that has since been removed.

Date of Start-Up: The yard has been in use since about 1975.

Date of Closure: According to the Navy's comments on the Draft RFA, there were no plans to continue to use the unit in the future.

Wastes Managed: Reported waste non-PCB transformers are present. In the past this yard may have been used to store and repair PCB-containing transformers, according to the Initial Assessment Study, 1984.

Release Controls: The yard is covered with asphalt that was visibly cracked during the VSI. No drain or berming is present to control run-off from the yard. The yard was surrounded by a chain-link fence at the time transformers were stored in the area.

History of Releases: The release history for this unit is not currently known. *References*: 1, 2

Actions Taken: This SWMU was included in the IR Program (Site 14) and was recommended for no further action in the IAS:

> "Soil samples were collected in the transformer storage area to evaluate if there was any leakage in 1983 by the Public Works Department at NAB Little Creek. No detectable concentration of PCB was found in any of the soil samples collected. Thus the PCBs are contained in the transformer cases to this time. No confirmation study is recommended."

Two soil samples were also taken in 1989 and tested for PCBs in preparation of building the existing sand and gravel storage bins. The results were 437.2 ppb (9326F) and 81.32 ppb (9326G). See the figure for locations and Appendix A for a January 3, 1990 letter and the laboratory results.

From October 25-31, 1995 this site was sampled for Relative Risk Ranking using DOD's model.

Two surface soil samples were collected and analyzed for SVOCs and Pest/PCBs. See the figure for SWMU and sampling locations. This SWMU was renumbered to SWMU 1. The following table lists the compounds detected.

1995 Relative Risk Ranking Sampling Results			
SWMU 17	LC02-S1	LC02-S2	Res. Soil RBC
SEMIVOLATILES (µg/kg)			
Phenanthrene	ND	37 J	NA
Anthracene	ND	8 J	2300000*
Carbazole	ND	17 J	32000
Fluoranthene	ND	100 J	310000*
Pyrene	7 J	96 J	230000*
Benzo(a)anthracene	ND	28 J	870
Chrysene	ND	52 J	87000
Benzo(b)fluoranthene	ND	45 J	870
Benzo(k)fluoranthene	ND	34 J	8700
Benzo(a)pyrene	ND	62 J	87
Indeno(1,2,3-cd)pyrene	ND	38 J	870
Benzo(g,h,i)perylene	ND	71 J	NA
PESTICES/PCBs			
Heptachlor	ND	0.81 JP	140
4,4'-DDE	ND	150 P	1900
4,4'-DDD	ND	210	2700
4,4'-DDT	ND	1100 D	1900
alpha-Chlordane	ND	88 P	1800
Gamma-Chlordane	ND	100	1800
Aroclor-1260	ND	700	320

*Residential Soil RBC/10 for non-carcinogens

Comments: The Revised RFA recommended that surface and shallow subsurface soil sampling be conducted to determine if releases of hazardous constituents have occurred. An appropriate spacing system should be constructed on the perimeter soils of the paved areas. At least one surface and subsurface soil sample should be collected from each spaced section. The samples should be analyzed for PCBs. The Draft Permit states that soil samples should be collected and analyzed for PCBs and Semi-Volatiles.

Recommendations: Recommend no further action for this SWMU due to the absence of any known releases, no stains were observed during the VSI, and the majority of the yard was paved while the transformers were stored. Also, an unknown number of soil samples were collected in 1983 and were non-detect for PCBs. Of the four soil samples collected in 1989 and 1995, three contained PCBs well below the 1 ppm action level for residential areas. The other compounds listed were below regulatory standards.

On August 10, 1999, EPA, DEQ, and the Navy discussed this site. Clarification of regulatory standards or action levels for PCBs is required before a final decision can be made. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000) .

SWMU 24 (IR Site 9) Driving Range Landfill

Description: The Driving Range Landfill is located near Building 3699. During the period of operation of the base incinerator, this landfill was the primary disposal area for all solid waste generated on the base. After the landfill was closed a berm was constructed, using clean fill, along the east side of Hewitt Drive. Sewage sludge was brought in from the Hampton Roads Sanitation District plant along the southern base boundary to enhance the growth of grasses. The area was converted into a driving range.

Date of Start-Up: This landfill began operations in 1950.

Date of Closure: The landfill ceased operations in 1956.

Wastes Managed: Incinerator ash, bypassed materials, all base solid waste (after segregation of metals), motor oils, transformer oils containing PCBs, and scrap containers from pesticides were disposed here. It is estimated that 40,000 cubic yards of solid waste was disposed at the unit.

Release Controls: No release controls were used at this unit. The disposal method employed was to dig a pit or trench with a piece of heavy equipment with a bucket, such as a dragline or a crane. The hole was excavated to a depth at which caving of the sides became a problem. This was usually from one to six feet below the water table, depending on the nature of the material being excavated. The ash or solid waste was then disposed directly into these pits. No precautions were taken to isolate the waste from the ground water. The operator covered the active cell whenever a piece of suitable equipment was available.

History of Releases: Sampling completed through the IR Program to date has identified Arsenic, Barium, Iron, and Zinc as Chemicals of Concern. *References*: 1, 2, 3

Comments: The Revised RFA stated that the facility was conducting a soil and groundwater remedial investigation as part of the NACIP Program. No additional action was suggested beyond the scope of the study at the present time. The Draft Permit states that this SWMU shall be included in the VI along with the sampling and analysis that were used and the results. However, the Driving Range Landfill falls under the IR Program (Site 9). Currently Long-Term Monitoring of groundwater is being conducted at the site. Seven rounds have been completed and all results have met the established trigger levels approved by the DEQ.

Recommendations: Recommend no further action for this SWMU due to its status as a CERCLA IR Site receiving investigation. All required actions will be completed within the IR Program.
On August 10, 1999, EPA and DEQ agreed that no further action was required for site screening for this SWMU. In January 2000, the EPA, DEQ, and the Navy identified the site for reference in the FFA for Work to be Preformed (Section X) and in the Findings of Fact (Section IV).

SWMU 25 (IR Site 10) Sewage Treatment Plant Landfill – Desert Cove Landfill

SWMU 26 (IR Site 10) Sewage Treatment Plant Landfill – South of Desert Cove Landfill

Description: Two landfills were operated just west of the former base sewage treatment plant. The southerly of the two was the original base landfill. Reportedly, it was operated as an area landfill, which was extended out into a now filled arm of Desert Cove. Disposal was directly into the water and resulted in the total filling of approximately five acres of the cove. After the five-acre area on the south side of Desert Cove had been partially filled, disposal began on the north side of the cove in an area with marshy vegetation. A total of about 13-1/2 acres of this area was filled.

Date of Start-Up: These landfills began operation in 1941-1942.

Date of Closure: These landfills were no longer used for *e waste* disposal when the driving range landfill (SWMU 24) was opened in 1952. However, sludge from the sewage treatment plant continued to be deposited in the areas until the plant ceased operating in 1968.

Wastes Managed: According to the Initial Assessment Study, 1984, at an average landfill thickness of six feet, the total volume disposed here would be approximately 46,500 cubic yards of material. During the period of 1949 to 1952, most of the filling was with solid waste. After 1952, and until shutdown of the sewage treatment plant in 1968, sludge from that operation was disposed of in the eastern portion of this area (northwest of the sewage treatment plant). The disposal areas accommodated domestic waste and virtually all types of industrial waste generated on the base. It is likely that almost any waste or surplus material probably was disposed there.

Release Controls: Materials were disposed directly into the water and there was no containment mechanisms. During extremely high tides, the area would naturally have been inundated, and during extreme storm events, the washover from the bay across the beach could also have contributed to the expected migration of material. By 1954, Desert Cove had been improved by bulkheading and much of the original Desert Cove Inlet which extended back into this area had been filled.

History of Releases: Sampling completed through the IR Program to date has identified Arsenic, Beryllium, Iron, Nickel, and Zinc as Chemicals of Concern. *References*: 1, 2, 3

Comments: The Revised RFA stated that the facility was conducting a soil and groundwater remedial investigation as part of the NACIP Program. No additional action was suggested beyond the scope of the study at the present time. The Draft Permit states that this SWMU shall be included in the VI along with the sampling and analysis that were used and the results. However, The Sewage Treatment Plant Landfills fall under the IR Program (Site 10). Currently Long-Term Monitoring of groundwater is being conducted at the site. Seven rounds have been completed and all results have met the established trigger levels approved by the DEQ.

Recommendations: Recommend no further action for these SWMUs due to their status as a CERCLA IR Site receiving investigation. All required actions will be completed within the IR Program.
On August 10, 1999, EPA and DEQ agreed that no further action for site screening was required for these SWMUs. In January 2000, the EPA, DEQ, and the Navy identified the site for reference in the FFA for Work to be Preformed (Section X) and in the Findings of Fact (Section IV).

SWMU 27 (IR Site 11) Former School of Music Plating Shop – Building 3651

SWMU 28 (IR Site 11) Former School of Music Plating Shop Neutralization Tank – Bldg 3651

Description: The school of music plating shop was located in Building 3651. The shop was used to repair and plate musical instruments for about 10 years. There are three rooms in the building, one of which contained a plating line. The plating bath materials were reportedly disposed of down the sink drain. The drain lead to a limestone neutralization tank about 25 feet southeast of the shop. After an unknown contact time in the neutralization tank the wastes were released to the sanitary sewer.

Date of Start-Up: Electroplating operations at the school of music started in 1964.

Date of Closure: Electroplating operations at the school of music ceased in 1974.

Wastes Managed: Materials used at the shop and disposed in the pit included silver cyanide, copper cyanide, brite dip (chromic acid), nickel plating bath waters, and acids. Other chemicals used and disposed of included lacquer and lacquer stripper. About 10 gallons per year of each plating chemical and lacquer stripper were disposed, for a total of 300 gallons of solution.

Release Controls: The neutralization tank treated the acidic portions of the plating baths. It is possible neutralization of the strippers and plating wastes may have immobilized the metals in the limestone tank. If not, any lower pH groundwater has the potential to transport contaminants away from the disposal site.

History of Releases: Sampling through the IR Program detected high levels of heavy metals inside the neutralization tank (SWMU 28). Trichloroethene and 1,1,1-Trichloroethane and breakdown products have been detected in the groundwater. *References*: 1, 2, 3

Comments: The Revised RFA stated that the facility was conducting a soil and groundwater remedial investigation as part of the NACIP Program. No additional action was suggested beyond the scope of the study at the present time. The Draft Permit states that this SWMU shall be included in the VI along with the sampling and analysis that were used and the results.
The school of music plating shop falls under the IR Program (Site 11). In 1995 a Removal Action was completed to remove the neutralization tank, all associated piping, and surrounding soil. This

removed all potential sources of metal contamination. The site is currently undergoing investigation for contamination by CVOCs.

Recommendations: Recommend no further action for these SWMUs due to their status as a CERCLA IR Site receiving investigation. All required actions will be completed within the IR Program.
On August 10, 1999, EPA and DEQ agreed that no further action for site screening was required for these SWMUs. In January 2000, the EPA, DEQ, and the Navy identified the site for reference in the FFA for Work to be Preformed (Section X) and in the Findings of Fact (Section IV).

SWMU 77 (IR Site 12) NEX Laundry Disposal Area – Building 3323

Description: The exchange laundry/dry cleaning facility was operated in the former Building 3323 across from Building 3324. Perchlorethylene (PCE) was used in dry cleaning operations. The unit was razed and the former location is now the parking lot for the new commissary.

Date of Start-Up: The old navy exchange laundry began operations in 1973.

Date of Closure: The unit ceased operations in 1978.

Wastes Managed: The wastes listed in the table below were used as part of the laundry and dry cleaning operations.

Release Controls: No release controls were used at this unit, according to facility personnel.

History of Releases: A total of approximately 1,320 gallons of the chemicals listed in the table were disposed of on the ground or in a nearby storm drain. In 1979, all remaining wastes were removed to the PWC hazardous waste storage facility (SWMU 76). *References*: 1, 2, 3

Chemicals disposed down the Navy Exchange Laundry's Storm Drain 1973-1978

Waste	Quantity/Dates	Origin
Perchlorethylene Sludge	4 drums (55 gal) per year	Perchlorethylene solvent
Soap	4 drums (55 gal) per year	Soap
Sizing	4 drums (55 gal) per year	Sizing
Dyes	4 drums (55 gal) per year	Dyes

Comments: The Revised RFA stated that the facility was conducting a soil and groundwater remedial investigation as part of the NACIP Program. No additional action was suggested beyond the scope of the study at the present time. The Draft Permit states that this SWMU shall be included in the VI along with the sampling and analysis that were used and the results.
The old navy exchange laundry falls under the IR Program (Site 12). The site is undergoing extensive investigation.

Recommendations: Recommend no further action for this SWMU due to its status as a

CERCLA IR Site receiving investigation. All required actions will be completed within the IR Program.
On August 10, 1999, EPA and DEQ agreed that no further action for site screening was required for this SWMU. In January 2000, the EPA, DEQ, and the Navy identified the site for reference in the FFA for Work to be Preformed (Section X) and in the Findings of Fact (Section IV).

SWMU 84 (IR Site 8) Demolition Debris Landfill

Description: The demolition debris landfill located on the northeast corner of the intersection of Amphibious Drive and Helicopter Road was used for the disposal of basically inert materials. The debris landfill was in operation approximately the same period of time as the Amphibious Base Landfill (SWMU 123). The base landfill is directly across Helicopter Road from the demolition debris landfill. This debris landfill was created in the pit left after the Public Works Department-Transportation Division excavated material from the site to surface parking lots. The borrowed area assumed a crescent shape as it was developed, but never included the areas still in woods between the tributary of Little Creek Cove and Amphibious Drive. The total land area involved in this disposal area is about two acres, with an average depth of disposal of approximately three feet.

Date of Start-Up: The unit began operation in 1971.

Date of Closure: Operations ceased at the unit in 1979.

Wastes Managed: Some of the items disposed of in the area include the debris from demolition of the former Dental Clinic (SWMU 83) (including a mercury-contaminated carpet); debris from the commissary store, which burned down in the mid-1960s; and debris from the 1975 Public Works Building fire. At present, several old concrete pipe sections are visible at the surface of the landfill, and an old loading ramp is also visible. This ramp may have been used in the borrow pit operations or in some unrelated mission. The only other wastes identified as entering this landfill were an occasional pail of diapers and other debris removed from the bar screen in the sewage pump stations on the base. The volume of these contributions was minimal. Because the base landfill was open during the time that this area was also open, and because access into the base landfill was somewhat simpler, none of those interviewed felt that other solid wastes were disposed of here. The approximate volume of nondegradable (and inert) material disposed in this area was determined to be 17,000 cubic yards. There is no evidence that the unit has managed hazardous wastes or constituents.

Release Controls: Materials disposed of here were placed directly into the borrow formed by removal of soils. There are no release controls at this unit.

History of Releases: No releases from this unit were identified in the files. However, an inventory of wastes disposed there does not exist and there are no release controls.
References: 1, 2

Comments: The Revised RFA suggested that shallow subsurface soil sampling be conducted to determine if releases have occurred. An appropriate grid system should be constructed, with one sample per grid to be analyzed for Metals and Semi-Volatiles. The Draft Permit states that soil samples shall be taken and analyzed for Semi-Volatiles and Metals. The Demolition Debris Landfill falls under the IR Program (Site 8) and all investigations and evaluations will be completed through that program.

Recommendations: Recommend no further action for this SWMU due to its status as a CERCLA IR Site receiving investigation. All required actions will be completed within the IR Program.
On August 10, 1999, EPA and DEQ agreed that no further action for site screening was required for this SWMU. In January 2000, the EPA, DEQ, and the Navy identified the site for reference in the FFA for Work to be Preformed (Section X) as a Site Screenintg Area and in Appendix A of the FFA.

SWMU 102 (IR Site 3) West Annex Fuel Leak – Piers 11-19

Description: Ship fuel and waste oil are known to contaminate soil along Piers 11 - 19 on the west side of Little Creek Channel. In the 1950s, waste oil was periodically sprayed in the area to control dust. In the 1960s, approximately 11,000 gallons of ship fuel was lost from the subsurface pipeline in the vicinity of Piers 16 to 19. The loss is thought to have occurred from a number of slow leaks in the pipeline. A new fuel pipeline was installed in 1970. New lines were installed again in 1995 due to continuing losses in fuel. No leaks have been detected in the new lines.

Date of Start-Up: Waste oil was periodically sprayed in the area during the 1950s. Fuel leaks in the 1960s and 1980s also occurred.

Date of Closure: This site was addressed within the UST Program. Two Site Characterizations for this area were completed and submitted to the DEQ. A Corrective Action Plan and Construction Work Plan were also submitted and approved. Construction on the treatment plant to implement the corrective action began in 1994. The groundwater treatment plant was started in November 1995. After solving start-up problems in the plant, it became fully operational in April 1996. The plant has been operating with only minor shutdowns since that time. The entire remediation effort is covered by a Corrective Action Plan General Permit as well as a Virginia Pollutant Discharge Elimination System Permit. No violations have occurred. Monthly Discharge Monitoring Reports are submitted to the DEQ. Quarterly CAP reports and an annual CAP report are also submitted. To date, more than 16,000 gallons of Diesel Fuel Marine have been recovered through the treatment system. It is estimated that another 10,000 gallons may be in the subsurface.

Wastes Managed: The unit is the site of a ship fuel spill. Waste oil was also sprayed on the soil in the area.

Release Controls: A permanent boom is deployed on the water in the area. There is also a vertical subsurface plastic barrier installed as part of the corrective action. This affords the surface water two layers of protection from fuel migrating from groundwater.

History of Releases: In the 1950s, waste oil was applied to soil in the area to control dust. In the 1960s, approximately 11,000 gallons of ship fuel was released to soil and groundwater along Piers 11 19. The presence of fuel in groundwater at the piers was discovered in the mid-1970s when a sewer was installed in the area. During the installation, several hundred thousand gallons of a fuel-groundwater mixture were pumped from the excavation, but only a small fraction of this was fuel. In 1982, an engineering firm retained by the Navy determined that 3,000 to 16,000 gallons of fuel are present in the unsaturated zone above the water table over a 13-acre area underlying the waterfront. It was also determined that an elongated slug of free oil is floating on the water table near Pier 12. The maximum slug size is estimated to be 0.8 acres and to contain 700 - 10,000 gallons of fuel. During the VSI, a sheen was observed on the water between Piers 16 and 17. A containment boom was in place, but was not containing the oil. Facility personnel indicated that oil flows out from the pier area when the tide goes out. *References*: 2

Comments: The Revised RFA states that remedial activities are currently ongoing by a contractor in the vicinity of the leak. A product recovery well system is operating near Pier 11. Product is collected via skimmer pumps and stored in above-ground tanks. Also, booms placed along Piers 11-19 were broken during the VSI and product was floating out into Little Creek Channel. It is suggested that additional product recovery systems be employed along Piers 11-19 and that adequate containment booms be placed along the piers. The Draft Permit states that additional product recovery systems should be employed along Piers 11-19 and adequate containment booms should be placed along the piers.

Since implementation of the permanent boom and the corrective action plan, no sheens have been observed on the water surface.

This SWMU was also included in the IR Program (Site 3). However, no further action was recommended.

Recommendations: Recommend no further action for this SWMU due to its coverage under the UST and VPDES Programs and permits. Remediation will continue at this site, however, it will be monitored and regulated through the UST and VPDES Programs with the DEQ.
On August 10, 1999, EPA and DEQ agreed that no further action was required for this SWMU as it is addressed under the UST and VPDES program.

SWMU 113 (IR Site 17) Motor Disposal Area – Building 1256

Description: Waste motor oil from a vehicle maintenance facility (the SIMA Transportation Shop) was formerly disposed by pouring it onto the soil in a corner of the scrap yard adjacent to Building 1256. It is estimated that the vehicle maintenance facility disposed of approximately 100 gallons of waste oil per year from 1949 to 1984. Runoff from a nearby lube oil and hydraulic fluid storage shed may also have contributed to soil contamination in the area. The area is close

to the west annex fuel leak (SWMU 102) and it might be difficult to distinguish between groundwater contamination from these units.

Date of Start-Up: Use of the vehicle maintenance facility began in 1949.

Date of Closure: Use of this SWMU was discontinued in 1984.

Wastes Managed: Waste motor oil was disposed of at SWMU 113. Runoff from a nearby lube oil and hydraulic fluid storage shed may also have entered the area.

Release Controls: No release controls for this unit were identified.

History of Releases: Waste motor oils were released to soil in this area. It is estimated that about 100 gallons of waste oil were disposed there per year between 1949 and 1984.
References: 1, 2

Actions Taken: According to facility personnel, oil stained soil was removed in 1986.

This site was studied under the IR Program (Site 17) and sampled for the Preliminary Site Inspection Report. A total of eight surface soil samples were collected from this area. They were screened in the field with a photo ionization detector (HNu). Those samples registering organic vapors higher than background were sent off for analysis. Four samples were sent off for analysis of TCL VOCs, TPH, and Lead. The table below lists the detections from the analyses. See Appendix A for original sampling results. See the figure labeled 2-5 for sampling locations.

PSI Soil Sample Results for IR Site 17, SWMU 113 1991

Chemical	Units	17-SS01	17-SS02	17-SS03	17-SS04
Methylene Chloride	µg/kg	20 B	8 B	10 B	8 B
Acetone	µg/kg	<11	<11	28 B	<12
TPH	mg/kg	2750	<32	<32	<34
Lead	mg/kg	57	7	22	7

The recommendation from the PSI is as follows:

> "No further action is recommended at the SIMA motor oil disposal area. There is no visible evidence supporting the IAS data that widespread dumping of waste oil occurred at this site. These observations were confirmed by the absence of TPH and other potential contaminants in the soil samples collected from the alleged disposal area at the site. There is one small area of oil stained soil (<4 square feet); however, this area is expected to have negligible impact on the environment. For these reasons, additional characterization or mitigation activities at this site are not justified."

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine if a release of hazardous constituents has occurred. An appropriate grid system should be constructed to include the visibly stained areas, plus an area of several feet around the stained zone. A surface and at least one shallow subsurface soil sample should be collected from each grid and analyzed for VOCs, SVOCs, and oil and grease. The Draft Permit

states that soil samples shall be taken and analyzed for Volatiles and Semi-Volatiles.

Recommendations: Recommend no further action for this SWMU due to the sampling results from 1991.
On August 10, 1999, EPA, DEQ, and the Navy discussed this SWMU. Six more soil samples will be collected from 0-6" and 12-18" east, west, and south of SS01 and analyzed for Metals and SVOCs. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000) .

SWMU 118 (IR Site 5) Special Boat Unit Yard – Buildings T-9, T-10, T-11

Description: The SBU Yard is located between Buildings T-9 and T-11 and in back of Building T-10. It appears that a portion of the yard was used for dispensing petroleum products. File information indicates that Building 9 has been used for vehicle maintenance and that oil from this facility has been applied to soil between Buildings 9 and 11. File information also indicates that a cable tank runs under the floor of Building 11 and has been used for disposal of waste oil.

Date of Start-Up: Buildings 9 and 11 have been used continuously since 1943.

Date of Closure: Buildings T-9, T-10, and T-11 were demolished in 1994-1995 to make way for new buildings.

Wastes Managed: Waste oils were managed at the SBU Yard.

Release Controls: No release controls were identified for this unit.

History of Releases: The soil in the SBU Yard was stained with oil during the VSI.
References: 1, 2

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine if a release of hazardous constituents has occurred. An appropriate grid system should be constructed to include the visibly stained areas, plus an area of several feet around the stained zone. A surface and at least one shallow subsurface soil sample should be collected from each grid and analyzed for VOCs, SVOCs, and oil and grease. The Draft Permit states that soil samples shall be taken and analyzed for Volatiles and Semi-Volatiles. This site is in the IR Program (Site 5). Any actions required will be completed under that Program.

Recommendations: Recommend no further action for this SWMU due to its status as a CERCLA IR Site receiving investigation. All required actions will be completed within the IR Program.
On August 10, 1999, EPA and DEQ agreed that no further action for site screening was required for this SWMU. In March 2000, the EPA, DEQ, and the Navy identified the site for reference in the FFA for Work to be Preformed (Section X) and in the Findings of Fact (Section IV).

SWMUs 123-126 (IR Site 7) Amphibious Base Landfill

Description: The Amphibious Base Landfill (SWMU 123) is located on the northwest corner of the intersection of Helicopter Road and Amphibious Drive. This unit was initially operated as a trench-type landfill with open burning of refuse in the trenches. Later, it was operated as an area landfill with the refuse spread over the ground surface and covered on a regular basis. It is no longer used for refuse disposal, although after closure of the landfill active SWMUs in the area included:

- SWMU 124 - Scrap Metal Separation Area
- SWMU 125 - Wood Accumulation Area
- SWMU 126 - Drum Turn-in Staging Area

In the scrap metal separation area (SWMU 124), scrap metals were sorted and crushed for salvage off-base. In the wood accumulation area (SWMU 125), scrap lumber was stored prior to being salvaged off-base by a contractor. In the drum turn-in staging area (SWMU 126), "empty" 55-gallon drums are stored prior to being salvaged and disposed of off-base by the Defense Reutilization and Marketing Office (DRMO). The drums may contain up to an inch of liquids.

Date of Start-Up: The Amphibious Base Landfill (SWMU 123) was operated from 1962 to 1979. The scrap metal separation area (SWMU 124) operated from 1970 to 1994. The wood accumulation area (SWMU 125) start-up date is not available. The drum turn-in staging area (SWMU 126) start-up date is not available.

Date of Closure: The Amphibious Base Landfill (SWMU 123) was closed in 1979. SWMUs 124, 125, and 126 were closed by 1994.

Wastes Managed: The Amphibious Base Landfill (SWMU 123) was used for the disposal of several categories of hazardous substances including pesticides, PCBs, PCB transformer cases, metal products, coal ash, lubricating oils, and solvents. The scrap metal separation area (SWMU 124) accepted scrap metal. The wood accumulation area (SWMU 125) accepted scrap lumber, such as wooden pallets. The drum turn-in staging area (SWMU 126) accepted drums which may have been empty or may have contained up to an inch of liquids.

Release Controls: The Amphibious Base Landfill (SWMU 123) has been covered with native soils. No other release controls were identified for this unit or the other units.

History of Releases: No releases were identified for SWMUs 124 and 125. Staining on the ground in the drum turn-in staging area indicates that releases of oils and possibly other substances have occurred. *References*: 3, 4

Actions Taken: According to the Navy's response to the Draft RFA, the oil stained soil at SWMU 126 has been removed.

Comments: The Revised RFA stated that the facility was conducting a soil and groundwater remedial investigation as part of the NACIP Program. No additional action was suggested beyond the scope of the study at the present time. The Draft Permit states that this SWMU shall be included in the VI along with the sampling and analysis that were used and the results. SWMUs 123 – 126 are a part of the IR Program (Site 7). From March to June 1998, the site was covered with 20,000 cubic yards of soil as a part of the remedial action. The site is now in Long-Term Monitoring for groundwater, surface water, and sediment. Any further actions will be completed within that program.

Recommendations: Recommend no further action for this SWMU for site screening due to its status as a CERCLA IR Site under investigation. All required actions will be completed within the IR Program.
On August 10, 1999, EPA and DEQ agreed that no further action for site screening was required for these SWMUs. In January 2000, the EPA, DEQ, and the Navy identified the site for reference in the FFA for Work to be Preformed (Section X) and in the Findings of Fact (Section IV).

AOC A (IR Site 15) PCB Capacitor Spill – Fire Station Number 1

Description: In the early 1980s, lightning struck an electric utility pole on E Street immediately south of Fire Station 1. One of the capacitors was damaged, resulting in a leak of about five gallons of dielectric fluid onto the ground beneath the capacitor pole. The damaged capacitor was replaced after the accident and analysis of soil samples taken in this area revealed PCB concentrations of 170 ppm and 601 ppm.

Actions Taken: Soil in the vicinity of the spill was excavated to a depth of 7 inches and taken away from the site. The final disposal of the PCB contminated soil is not known. The area was backfilled with clean soil.

As part of the Preliminary Site Inspection (July, 1991) soil samples were collected and analyzed for PCBs. The analytical results indicated only low levels of PCBs (<10 ppm) are present in the soil. Therefore, the PSI stated that no further action was recommended. Under applicable regulations (RCRA and TSCA) no mitigation actions are required. See Appendix A for sample results. See the figure labeled 2-3 for sampling location map.

Comments: The Revised RFA suggested that surface soil sampling be conducted to determine the extent of contamination. The Draft Permit states that soil samples should be taken and analyzed for PCBs. This site is part of the IR Program (Site 15).

Recommendations: Recommend no further action for this AOC due to the actions taken and the sample results showing only low levels of PCBs.
On August 10, 1999, EPA, DEQ, and the Navy discussed this site. Clarification of regulatory standards or action levels for PCBs is required before a final decision can be made. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of

the FFA (Partnering Team Meeting Minutes March 2000) .

AOC B (IR Site 16) PCB Capacitor Spill – Pole Number 425

Description: The PCB capacitor pole is located about 300 feet east of the intersection of Amphibious Drive and Helicopter Road. In the early 1980s, lightening struck the pole and caused less than five gallons of dielectric fluid to leak from the capacitor. A soil sample taken in April 1981 showed a level of 1,000 ppm PCBs.

Actions Taken: The site was resampled in the PSI (1991) and SI (1994). A Removal Action was completed at the site from March to July 1995. All confirmatory samples taken after excavation and prior to backfilling met the approved cleanup level of 10 ppm. The closeout report from the Removal Action was approved by EPA and DEQ and the site is now No Further Response Action Planned.

Comments: The Revised RFA suggested that surface soil sampling be conducted to determine the extent of contamination. The Draft Permit states that soil samples should be taken and analyzed for PCBs. This site is a part of the IR Program (Site 16).

Recommendations: On August 10, 1999, EPA, DEQ, and the Navy discussed this site. Clarification of regulatory standards or action levels for PCBs is required before a final decision can be made. A toxicology review of the confirmation samples taken after the excavation was completed may also be required. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000) .

IR Site 1 Building 1231 Oil Disposal Area

Description: This site is at the western edge of the Assault Craft Unit (ACU) 2 maintenance shop. The storm drain used for disposal was in use from 1954 until 1979, and excavated contaminated soil remained at the edge of the compound during the IAS. The surface soils were visibly saturated by oil. Tens of gallons of waste oil, solvents, and hydraulic fluid were disposed in the drain. Most waste oils were collected for transport to Craney Island or used for dust suppression. Some of the waste remaining in the contaminated soil excavated from the storm drain has been transported by surface water runoff under the compound boundary to flow into a nearby stormwater drain. However, the volume of waste remaining is limited to several gallons of material bound in the soil and does not merit conducting a confirmation study. No further action is recommended (Ref. 1).

Comments: This site was investigated within the UST Program. See SWMUs 42 and 43 in Section 3. A Site Characterization was performed. DEQ has granted closure of this site.

Recommendation: Recommend no further action for this Site due to the recommendation in the IAS and the approved closure by the DEQ.

IR Site 4 Reserve Center Motor Oil Disposal Area

Description: This site is an outdoor amphibious vehicle maintenance pad just north of Building 1. The soil along the edges of the pad and beneath the pavement were saturated with crankcase oil. Waste oils and antifreeze were disposed into the storm sewer from 1967 to 1981. They may also have been disposed directly on the soil. About 2,000 gallons per year are estimated to have been disposed of in this fashion, for a total of 30,000 gallons. Oil in the soil along the pad would migrate to the water table and then to Piers 9 and 10, about 300 feet to the northeast. Because the Public Works Department has begun collecting spent crankcase oil and a new oil/water separator system has been installed, the volume of oil spilled or disposed on the ground should be reduced or eliminated altogether.

Migration of the oils disposed in the Reserve Center areas has been impeded by the construction of an impermeable pavement that covers most of the disposal area. Isolation from percolating rainwater and removal of surface runoff limit the migration potential of this material very effectively. The remaining oil soaked soils which are still exposed in this area could contribute to contamination of the harbor as they are eroded and washed into the harbor. Mitigating measures are recommended to eliminate this risk (Ref. 1).

Actions Taken: This site was studied under the IR Program (Site 4) and sampled for the Preliminary Site Inspection Report. A total of 16 surface soil samples were collected from this area. They were screened in the field with a photo ionization detector (HNu). Those samples registering organic vapors higher than background were sent off for analysis. Ten samples were sent off for analysis of TCL VOCs, TPH, and Lead. The table below lists the detections from the analyses. See Appendix A for original sampling results. See the figure labeled 2-1 for sampling locations.

PSI Soil Sample Results for IR Site 4 1991

Chemical	Units	4-SS01	4-SS02	4-SS03	4-SS04	4-SS05
Methylene Chloride	µg/kg	6 B	8 B	16 B	8 B	10 B
Benzene	µg/kg	<6	<6	<6	<6	<6
Trichloroethene	µg/kg	<6	<6	2 J	<6	<6
TPH	mg/kg	<31	498	<35	6070	<32
Lead	mg/kg	11	7.0	28	32	18

Chemical	Units	4-SS06	4-SS07	4-SS08	4-SS09	4-SS10
Methylene Chloride	µg/kg	<6	<6	<5	<6	3 J
Benzene	µg/kg	<6	<6	<5	4 J	<8
Trichloroethene	µg/kg	<6	<6	<5	<8	<8
TPH	mg/kg	<32	<31	76	651	<31
Lead	mg/kg	53	21	30	15	11

The recommendation from the PSI is as follows:

"No further action is recommended for the Reserve Center Motor Oil Disposal Area. The results of the sampling program indicate that no hydrocarbon-related volatile organic compounds are present in the surface soils adjacent to the former motor oil disposal area. Three detections of TPH in excess of Virginia's 100 ppm TPH guidance level were recorded. One of these detections (4-SS09) was from a sample collected adjacent to the waste oil storage tank which was subsequently removed from the site. Excavation and removal of the tank included removal of the TPH-contaminated soils immediately surrounding the tank lid and from which sample 4-SS09 was collected. The other two detections of TPH were reported next to the storage area asphalt parking lot (4-SS02) and adjacent to a small tar pile (4-SS04) apparently left over from an earlier sealing of the storage area parking lot.

The presence of elevated TPH concentrations in surface soils adjacent to hydrocarbon sources is not unusual. Given that no VOCs were present at these locations, the TPH detections were probably related to heavy hydrocarbons associated with the asphalt parking lot.

A single detection of TCE at an estimated concentration of 2 ppb was also reported at the site. TCE was not detected in any of the other nine samples collected at the site and its detection is probably spurious.

The presence of potentially elevated lead concentrations in surface soils at Site 4 does not correlate with the occurrence of either TPH or volatile organics, indicating it is probably not related to a spill of fuel or oil. The true "background" concentration range of lead at NAB Little Creek is not known, and therefore it is possible that the concentrations detected at Site 4 are within this range. The most likely sources of lead at Site 4 (and elsewhere on the installation) was run-off from roads and parking areas and the deposition of airborne lead particulate from vehicle exhausts. As a result, the occurrence of localized areas with slightly elevated lead concentrations in surface soil is likely to be a widespread phenomena.

Removal of the waste oil tank and surrounding soil has effectively mitigated any past or current environmental problems associated with the on-site storage/disposal of waste oils at this site. In addition, areas of stained soil, described in the IAS, have been covered with an asphalt parking lot and therefore no longer pose a direct contact risk and no longer contaminate precipitation (which could flow as run-off into nearby surface waters or leach into the groundwater). Assuming proper management of crankcase oil and other wastes in the future, additional environmental concerns at Site 4 should not arise.

The IAS indicated the possible disposal of oil and antifreeze via the storm sewer system. Beyond the observation that a new oil-water separator had been installed at the site, this PSI did not address potential impacts of past waste management practices on the storm sewer system."

Comments: This site was investigated within the UST Program. See SWMU 59 in Section 3. DEQ has granted closure of this site. Although, this site is not part of NAB Little Creek. The

Navy does not own this land, and did not own the land during the disposal activities. The Naval Marine Reserve Center is responsible for this area.

Recommendation: Recommend no further action for this SWMU due to the actions taken within the IR Program and the UST Program. If further actions are necessary, the Naval Marine Reserve Center will be responsible for such actions.
On August 10, 1999, EPA, DEQ, and the Navy discussed this SWMU. EPA will investigate the legal responsibility of NAB Little Creek for this parcel of land under the HRS and NPL regulations. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000) pending legal review of property ownership.

3 - UNDERGROUND STORAGE TANK PROGRAM

The Underground Storage Tanks (USTs) are managed and regulated by the DEQ under VR-680-13-02 - Underground Storage Tanks; Technical Standards and Corrective Action Requirements. This State regulation is very comprehensive and in many cases is more stringent than the requirements of RCRA Subtitle I. All of the USTs require permits, inspections, and a certificate of use. The regulation covers:

- Permitting and inspection requirements for new UST Systems
- UST system design, construction, installation, and notification requirements
- General operating requirements
- Release detection
- Release reporting, investigation, and confirmation
- Release response, and corrective action for UST systems
- Out of service USTs and closure

All UST SWMUs are recommended for no further action as SWMUs due to approved closure by DEQ and/or their coverage under the UST Program. If problems are encountered in the future at any of these sites, they will be investigated and evaluated through the UST Program.

A total of 26 underground storage tanks were identified facility-wide. The table below lists the information on each tank, including the current status. Tanks for which a closure letter from DEQ was received are listed as "Closed" and the date of the letter is indicated (copies of the letters are provided in Appendix C). Five tanks have been closed (removed or closed in-place), but no letter has been received from DEQ. The date indicated is the date of removal or closure in-place. The Navy requested DEQ provide closure letters on December 30, 1996. However, no letters were received. Per a phone conversation on January 15, 1999, between Kelly Greaser from NAB Little Creek Environmental and Tom Madigan of TRO-DEQ, this unit is identified as "closed" in the DEQ database. According to Tom, the only way the database would have been updated is if a closure report had been received and approved by the DEQ. However, the closure letters were not sent to the Navy, and now the closure reports cannot be located. Per another phone conversation with Tom Madigan on April 13, headquarters could not locate the closure reports or closure letters. However, he reiterated that the tanks are closed and no further action is required.

SWMU	Name & Building	Capacity (Gal)	Install Date	Cnstr. Mtrl.	Current Status	Date
34	NEX Vending Office – Building 3319	1000	1969	Steel	Closed	1991
35	PWC Transportation Garage – Bldg 3661	550	1964	Steel	Removed	1989
36	Auto Hobby Shop – Building 3530	500	1954	Steel	Closed IP	1991
37	CB301-3 Seabee Maintenance	2000	NA	FRP	Closed	1994
38	ACU4 – Building 3817	550 (2)	After 86	NA	Closed	1999
39	East Annex Gas Station – Building 3615	550	1961	NA	Closed	1994
40	BMU2 – Building 3142	550	1985	FRP	Closed	1994
41	MWR Equipment Rental – Bldg 3108	550	1985	FRP	Closed	1991

42	ACU2 Tank 3 – Building 1231	550	1981	FRP	Closed	1994
43	ACU2 Tank 4 – Building 1231	550	1981	FRP	Closed	1994
44	NSWG-2 – Building T-9	550	1985	FRP	Closed	1994
45	NSWG-2 Solvent Tank – Building 3806	See	SWMU	139	NA	NA
46	NAMS – Building 3872	500	1985	S.S.	Closed	1994
47	SUR TASS-3 – Building 1558	4000	1985	FRP	Closed	1995
48	Oil/Water Separator – Building 3896	NA	NA	NA	NA	NA
49	Tank 1 – Building 3860	10,000	1976	FRO	Closed	1993
50	Tank 2 – Building 3860	500	NA	Steel	Removed	1989
51	Tank 6 – Building 3530	500	1954	Steel	Removed	1990
52	CB208	550	1983	FRP	Closed	1994
53	CB214	550	1983	FRP	Closed	1994
54	CB301-4 Seabee Maintenance	550	1981	FRP	Closed	1994
55	CB315	550	1983	FRP	Closed	1994
56	SIMA Tank 2 – Building 1265	1000	1984	Steel	Closed	1994
57	SIMA Tank 3 – Building 1265	1000	1984	Steel	Closed	1994
58	SIMA Tank 4 – Building 1265	1000	1984	Steel	Closed	1994
59	Naval Marine Reserve Center Tank 1	550	1983	FRP	Closed	1991
60	Tank 3033	550	1983	FRP	Removed	1988
139	SEALT 4 Waste PD 680 Tank – 3806	200	1984	FRP	Closed	1991
142	SEAL DV 4 Waste PD 680 Tank - 3806	See	SWMU	139	NA	NA

FRP - Fiberglass Reinforce Plastic
NA - Not Available

Wastes Managed: These tanks generally contain used crankcase and transmission oil.

Release Controls: The tanks are constructed of fiberglass reinforced plastic or steel and are emptied on a regular basis by PWC or an outside contractor.

History of Releases: No releases were reported in the files for the underground tanks. During the VSI, evidence of releases were observed at the following units:

- SWMU 35 - Stains were observed on soils surrounding the tank fill pipe.
- SWMU 40 - The unit is located within a bermed area. The asphalt outside the bermed area is discolored, especially under the dispensing valve coming off of the bermed area.

References: 1, 2, 5

Comments: For all of the UST SWMUs (except SWMU 40), the Revised RFA and Draft Permit suggested that the tanks and their associated piping must be tested to verify the integrity of the units. Testing should be completed through an appropriate method (e.g., pressure testing). If the unit is not intact, soil sampling should be performed to determine if releases have occurred. The sampling should be conducted at locations where leaks or cracks have been identified. However tightness testing and monitoring requirements are covered under the VA UST regulation. Each SWMU in the table above is discussed individually as follows.

Recommendations: On June 30, 1999, EPA and DEQ agreed that no further action was required for any of the SWMUs in this section because of prior closure or their coverage under the UST

Regulations (Partnering Meeting Minutes June 1999).

SWMU 34 NEX Vending Office Used Oil UST – Building 3319

Description: 1000 gallon UST constructed of steel and installed in 1969.

Comments: The tank was removed in 1990. A Site Characterization was submitted to the DEQ. The Navy received notification from DEQ on August 27, 1991 that no further assessment or remedial action was necessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B.

SWMU 35 PWC Transportation Garage Used Oil UST – Building 3661

Description: 550 gallon UST constructed of steel and installed in 1964.

Comments: The tank was removed in 1989. A Site Characterization was submitted to the DEQ. Although the tank was taken out of service, the Navy had no closure letter on file. The Navy requested DEQ provide a closure letter on December 30, 1996. However, no letter was received. Per a phone conversation on January 15, 1999, between Kelly Greaser from NAB Little Creek Environmental and Tom Madigan of TRO-DEQ, this unit is identified as "closed" in the DEQ database. According to Tom, the only way the database would have been updated is if a closure report had been received and approved by the DEQ. However, in this case, the closure letter was not sent to the Navy, and now the closure report cannot be located. Per another phone conversation with Tom Madigan on April 13, headquarters could not locate the closure report or closure letter. However, he reiterated that the tanks are closed and no further action is required. According to the Navy's comments on the Draft RFA, the stained soils surrounding the tank fill pipe were removed and disposed. The Draft Permit stated that the VI Work Plan should contain documentation that the soil has been removed and disposed properly. Although no specific records are available concerning the previous disposal of petroleum contaminated soils it was routine practice to sample the soil and dispose of it according to the sample results.

SWMU 36 Auto Hobby Shop Used Oil UST – Building 3530

Description: 500 gallon UST constructed of steel and installed in 1954.

Comments: The tank was closed in place in 1991. Two Site Characterization reports have been submitted to the DEQ. A Corrective Action Plan was also submitted and approved by DEQ. Implementation of the CAP began March 1998. Free product is being recovered at the site. The site is monitored weekly. Quarterly progress reports are submitted to DEQ.

SWMU 37 CB301-3 Seabee Maintenance Used Oil Tank

Description: Two tanks are present at this facility. 301-3 is a 2000 gallon used oil Fiberglass Reinforced Plastic tank (SWMU 37). The Revised RFA incorrectly states that this tank is 550 gallons. 301-4 is a 550 gallon used oil Fiberglass Reinforced Plastic Tank (SWMU 54).

Comments: These tanks were removed under Phase IV of the UST Program. They were replaced with double wall fiberglass tanks and piping with interstitial monitoring on the tanks and the piping. The Navy received notification from DEQ on September 20, 1994 that no further assessment or remedial action was necessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B.

SWMU 38 ACU-4 Used Oil Tanks – Building 3817

Description: 2, 550 gallon USTs installed after 1986.

Comments: These tanks were removed in 1992. Although the tank was taken out of service, the Navy had no closure letter on file. The Navy requested DEQ provide a closure letter on December 30, 1996. However, no letter was received. Per a phone conversation on January 15, 1999, between Kelly Greaser from NAB Little Creek Environmental and Tom Madigan of TRO-DEQ, this unit is identified as "currently in use" in the DEQ database. On January 15, 1999, the Navy submitted a letter to the DEQ to resolve discrepancies between the Navy's database of tanks and DEQ's. These two tanks were removed and there was no evidence of release when they were removed. The Navy will continue to coordinate with DEQ on these tanks. Any further action required will be completed through the UST Program. See Appendix B for the January 15, 1999 letter.

SWMU 39 East Annex Gas Station Used Oil Tank – Building 3615

Description: 550 gallon UST installed in 1961 (IAS).

Comments: The tank was removed in 1991. A Site Characterization was submitted to the DEQ. The Navy received notification from DEQ on August 17, 1994 that no further assessment or remedial action was necessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B.

SWMU 40 BMU-2 Used Oil Tank – Building 3142

Description: 550 gallon UST constructed of fiberglass reinforced plastic and installed in 1985. The unit is located within a bermed area. The asphalt outside the bermed area was discolored during the VSI, especially off the dispensing valve coming off of the bermed area.

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine if a release of hazardous constituents has occurred. An appropriate grid system should be constructed to include the visibly stained areas, plus an area of several feet around the stained zone. A surface and at least one shallow subsurface soil sample should be collected from each grid and analyzed for VOCs, SVOCs, and oil and grease. The Draft Permit states that soil samples should be collected and analyzed for VOCs and SVOCs.

The tank was removed in 1991. A Site Characterization was submitted to the DEQ. The Navy received notification from DEQ on August 16, 1994 that no further assessment or remedial action was necessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B.

SWMU 41 MWR Equipment Rental Used Oil Tank – Building 3108

Description: 550 gallon UST constructed of fiberglass reinforced plastic and installed in 1985.

Comments: The tank was removed in 1990. The Navy received notification from DEQ on October 18, 1991 that no further assessment or remedial action was necesecessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B.

SWMU 42 ACU-2 Used Oil Tank 3 – Building 1231

Description: 550 gallon UST constructed of fiberglass reinforced plastic and installed in 1981.

Comments: The tank was removed in 1991. A Site Characterization was sent to the DEQ. The Navy received notification from DEQ on August 16, 1994 that no further assessment or remedial action was necessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B.

SWMU 43 ACU-2 Used Oil Tank 4 – Building 1231

Description: 550 gallon UST constructed of fiberglass reinforced plastic and installed in 1981.

Comments: The tank was removed in 1991. A Site Characterization was sent to the DEQ. The Navy received notification from DEQ on August 16, 1994 that no further assessment or remedial action was necessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B.

SWMU 44 NSWG-2 Used Oil Tank – Building T-9

Description: 550 gallon UST constructed of fiberglass reinforced plastic and installed in 1985.

Comments: The tank was removed in 1991. A Site Characterization was sent to the DEQ. The Navy received notification from DEQ on August 16, 1994 that no further assessment or remedial action was necessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B.

SWMU 45 Naval Special Warfare Group 2 Solvent Tank – Building 3806

Within the NSWG command are the SEAL Teams. NAB Little Creek is resident command for four SEAL Teams. All four teams occupy one large compound, of which building 3806 is a part. Only one solvent tank existed in this compound, although three different SWMU numbers were assigned. This SWMU is a duplicate of SWMU 139. Refer to SWMU 139 for evaluation.

SWMU 46 NAMS Used Oil Tank 4 – Building 3872

Description: 500 gallon UST constructed of stainless steel and installed in 1985.

Comments: The tank was removed by 1994. The Navy received notification from DEQ on June 8, 1994 that no further assessment or remedial action was necessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B.

SWMU 47 SURTASS-3 Used Oil Tank – Building 1558

Description: 4000 gallon UST constructed of fiberglass reinforced plastic and installed in 1985 used for storage of NORPAR 12.

Comments: The tank was removed by 1995. The Navy received notification from DEQ on August 15, 1995 that no further assessment or remedial action was necessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B.

SWMU 48 Oil/Water Separator – Building 3896

Description: This SWMU is actually an oil/water separator. Refer to Section 5 for evaluation of this SWMU.

SWMU 49 Used Oil Tank 1 – Building 3860

Description: 10,000 gallon UST constructed of fiberglass reinforced plastic and installed in 1976.

Comments: The tank was removed in 1992 and replaced with a new double walled 10,000 gallon fiberglass UST. The Navy received notification from DEQ on May 10, 1993 that no further assessment or remedial action was necessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B. This SWMU is duplicated as SWMU 100. There is only one UST at the Fuel Farm. SWMU 100 is addressed in section 1 because it was recommended for no further action in the Revised RFA.

SWMU 50 Used Oil Tank 2 – Building 3860

Description: 500 gallon UST constructed of steel.

Comments: The tank was removed in 1989. A Site Characterization was submitted to the DEQ. Although the tank was taken out of service, the Navy had no closure letter on file. The Navy requested DEQ provide a closure letter on December 30, 1996. However, no letter was received. Per a phone conversation on January 15, 1999, between Kelly Greaser from NAB Little Creek Environmental and Tom Madigan of TRO-DEQ, this unit is identified as "closed" in the DEQ database. According to Tom, the only way the database would have been updated is if a closure report had been received and approved by the DEQ. However, in this case, the closure letter was not sent to the Navy, and now the closure report cannot be located. Per another phone conversation with Tom Madigan on April 13, headquarters could not locate the closure report or closure letter. However, he reiterated that the tanks are closed and no further action is required.

SWMU 51 Used Oil Tank 6 – Building 3530

Description: 500 gallon UST constructed of steel and installed in 1954.

Comments: The tank was removed in 1990. A Site Characterization was submitted to the DEQ. Although the tank was taken out of service, the Navy had no closure letter on file. The Navy requested DEQ provide a closure letter on December 30, 1996. However, no letter was received. Per a phone conversation on January 15, 1999, between Kelly Greaser from NAB Little Creek Environmental and Tom Madigan of TRO-DEQ, this unit is identified as "closed" in the DEQ database. According to Tom, the only way the database would have been updated is if a closure report had been received and approved by the DEQ. However, in this case, the closure letter was not sent to the Navy, and now the closure report cannot be located. Per another phone conversation with Tom Madigan on April 13, headquarters could not locate the closure report or closure letter. However, he reiterated that the tanks are closed and no further action is required.

SWMUs 56-58 SIMA Used Oil Tanks 2-4 – Building 1265

Description: All three tanks are 1000 gallon USTs constructed of steel and installed in 1984.

Comments: SWMU 56 was removed by 1994. SWMUs 57 and 58 were removed in 1991 and replaced with oil/water separators. A Site Characterization was sent to the DEQ. The Navy received notification from DEQ on August 16, 1994 that no further assessment or remedial action was necessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B.

SWMU 59 Naval/Marine Reserve Center Used Oil Tank 1

Description: 550 gallon UST constructed of fiberglass reinforced plastic and installed in 1983.

Comments: The tank was removed in 1991. The Navy received notification from DEQ on October 18, 1991 that no further assessment or remedial action was necessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B. However, the Naval/Marine Reserve is its own entity and is not part of NAB Little Creek. This site should not be part of NAB Little Creek's FFA.

SWMU 60 Used Oil Tank – Building 3033

Description: 550 gallon UST constructed of fiberglass reinforced plastic and installed in 1983.

Comments: The tank was removed in 1988. A Site Characterization was not required by DEQ. Although the tank was taken out of service, and a Site Characterization was not required, the Navy had no closure letter on file. The Navy requested DEQ provide a closure letter on December 30, 1996. However, no letter was received. Per a phone conversation on January 15, 1999, between Kelly Greaser from NAB Little Creek Environmental and Tom Madigan of TRO-DEQ, this unit is identified as "closed" in the DEQ database. According to Tom, the only way the database would have been updated is if a closure report had been received and approved by the DEQ. However, in this case, the closure letter was not sent to the Navy, and now the closure report cannot be located. Per another phone conversation with Tom Madigan on April 13, headquarters could not locate the closure report or closure letter. However, he reiterated that the tanks are closed and no further action is required.

SWMU 139 SEAL Team 4 Waste PD 680 Tank – Building 3806

Description: 200 gallon tank constructed of fiberglass reinforced plastic and installed in 1983. The tank is located outside Building 3806 and is plumbed to a sink used for weapons cleaning inside the Seal Team 4 section of the building. The tank is periodically pumped and wastes are

SWMU 52 CB208 Used Oil Tank

Description: 550 gallon UST constructed of fiberglass reinforced plastic and installed in 1983.

Comments: The tank was removed by 1994. The Navy received notification from DEQ on May 27, 1994 that no further assessment or remedial action was necessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B.

SWMU 53 CB214 Used Oil Tank

Description: 550 gallon UST constructed of fiberglass reinforced plastic and installed in 1983.

Comments: The tank was removed by 1994 The Navy received notification from DEQ on May 27, 1994 that no further assessment or remedial action was necessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B.

SWMU 54 CB301-4 Seabee Maintenance Used Oil Tank

Description: Two tanks are present at this facility. 301-3 is a 2000 gallon fiberglass reinforced plastic tank (SWMU 37). 301-4 is a 550 gallon fiberglass reinforced plastic tank (SWMU 54) installed in 1981.

Comments: These tanks were removed under Phase IV of the UST Program. They were replaced with double wall fiberglass tanks and piping with interstitial monitoring on the tanks and the piping. The Navy received notification from DEQ on September 20, 1994 that no further assessment or remedial action was necessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B.

SWMU 55 CB315 Used Oil Tank

Description: 550 gallon UST constructed of fiberglass reinforced plastic and installed in 1983.

Comments: The tank was removed in 1991. The Navy received notification from DEQ on August 16, 1994 that no further assessment or remedial action was necessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B.

disposed off-base. PD 680 is a Stoddard solvent, a petroleum distillate and does not contain any chlorinated compounds.

Date of Closure: The tank was removed in 1990.

History of Releases: Release history from the Waste PD 680 UST is not known. There is a gauge on the tank, but no inventory records exist. *References*: 1

Actions Taken: The tank was removed in 1990. The Navy received notification from DEQ on October 18, 1991 that no further assessment or remedial action was necessary at the site. However, if additional contamination is discovered in the future, it will be investigated and evaluated through the UST Program. The closure letter is included in Appendix B.

Comments: The Revised RFA suggests integrity testing, as for all of the tanks. The Draft Permit states that the Permittee has removed the oil stained surficial soils. The VI Work Plan shall contain documentation that the soil has been removed and disposed of properly. This may have been in error because the Revised RFA does not discuss oil stained soils associated with this SWMU.

Recommendations: EPA, DEQ, and the Navy discussed this SWMU on May 11, 1999. There was a concern that a standard TPH test may not be representative of a "solvent". On June 30, 1999, a toxicology report was provided on several types and brands of Stoddard solvent. Based on the chemical components of the solvent, a TPH test would be representative of the presence of the solvent, which is only a petroleum distillate and does not contain any chlorinated compounds. Due to the approved closure from DEQ, and the petroleum nature (non-chlorinated) of the solvent, EPA and DEQ agreed no further action was required for this SWMU (Partnering Team Meeting Minutes June 1999).

SWMU 142 SEAL Delivery Vehicle 4 Waste PD 680 Tank – Building 3806

NAB Little Creek is resident command for four SEAL Teams. All four teams occupy one large compound, of which building 3806 is a part. Only one solvent tank existed in this compound, although three different SWMU numbers were assigned. This SWMU is a duplicate of SWMU 139. Refer to SWMU 139 for evaluation.

4 - SPCC PLAN/AST PROGRAM

The NAB Little Creek Oil Spill Prevention, Control, and Countermeasures (SPCC) Plan was prepared in accordance with the provisions of CFR part 112. The purpose of the spill plan is to establish procedures, methods, equipment, and other requirements to prevent the discharge of oil from the base facilities into or upon navigable waters of the United States or adjoining shorelines. The plan addresses:

- Existing facilities located on base that pose the potential for an oil spill.
- Existing containment and diversionary structures constructed to control spill occurrences.
- Recommendations for operational changes and facility modifcations to reduce the probability of a spill event.
- Responsibilities for record keeping, inspections, personnel training, security, and notifications relative to plan implementation.

All Above Ground Storage Tanks (ASTs) are covered under the SPCC plan (even those smaller than 660 gallons). All ASTs (except SWMU 63) on the facility are either convault tanks or have secondary containment meeting current regulations (100 year flood plus 6 inches). SPCC regulations also require cleanup and reporting of spills to DEQ.
As part of the upgrades for the SPCC Plan, all (except SWMU 30 and 108) ASTs on base are scheduled to be replaced by convault tanks. SWMU 108 will be removed and will not be replaced. During the replacement, any stained soil will be sampled and disposed appropriately. Under the current AST regulations, tanks 660 gallons or larger are required to be registered. The registration process will ensure proper closure when necessary.
Therefore, most ASTs on the facility are recommended for no further action as SWMUs. If problems are encountered in the future, these sites will be investigated and actions will be taken as necessary through the SPCC Program or the AST Program, with appropriate reporting to DEQ.

SWMU 30 Leaking Above Ground Diesel Tank – Building 3400

Description: Building 3400 is a lift station for the Hampton Roads Sanitation District Wastewater Treatment Plant. Adjacent to the building is an above ground diesel tank that has leaked. The tank holds about 150 gallons and rests about two feet above ground by four steel legs.

Date of Start-Up: The date of start-up for this tank is not currently available.

Date of Closure: There are no plans for closure of this unit.

Wastes Managed: Diesel fuel is reportedly held in this tank.

Release Controls: The tank rests on a stand above an asphalt surface. The asphalt appears to be in good condition although certain portions appeared to have been recently repaired. Sand has been placed immediately below the tank in what appeared to be an attempt to adsorb some of the

leaked product.

History of Releases: The asphalt area immediately below and the grass surrounding the tank was heavily stained with oily liquids. *References*: 2

Actions Taken: Currently the tank has been rearranged and a concrete berm has been placed around the tank. The tank and bermed area are in good condition.

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine the extent of contamination. An appropriate grid system be constructed in and several feet around the stained areas. The samples should be analyzed for EP Tox Lead, VOCs, and Semi-Volatiles. The Draft Permit states that soil samples should be taken and analyzed for EP Tox, Lead, VOCs, and Semi-Volatiles.

According to the Navy's response to the Draft RFA, this tank does not leak systematically. The stains observed during the VSI were from a one time overfill. Only minor staining was present in the VSI photo. Photos were taken on October 4, 1993 to compare to the VSI photo. Also, the AST was completely surrounded by asphalt. Runoff may have flowed to a very small patch of soil toN?to the north of the tank. Human health risk from a potential overfill to such a small area would be minimal.

Recommendations: On June 30, 1999, EPA, DEQ, and the Navy agreed that two soil samples will be collected from the grassy fenced area of the lift station from 0-6" and analyzed for TPH. . In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000).

SWMU 31 Pier 10 Leaking Above Ground Fuel Tanks – Building 1263

Description: Three leaking fuel tanks are located on Pier 10, near Building 1263. Two 55-gallon drums storing waste oil are also located in the tank area. The tanks are identical in capacity (approximately 200 gallons each) and are labeled "diesel", "gasoline", and "JP-5". The tanks are adjacent to one another and are resting on a steel platform. The leaking appears to be routine and systematic. The drums are frequently pumped by a vacuum truck, and the water and waste oil are disposed of as waste oil.

Date of Start-Up: The date of start-up for these tanks is not currently available.

Date of Closure: The tanks were removed in 1995. The concrete berm is still used as secondary containment for POL storage.

Wastes Managed: The three tanks are labeled and presumably contain diesel fuel, gasoline, and JP-5 fuel. The two drums contain waste oil.

Release Controls: The drums are resting on a steel platform above a concrete pad in good repair.

The pad is bermed by a 4-inch high concrete curb containing a valve that allows release to the outside of the bermed area. A metal drip collection pan is located beneath the tank valves.

History of Releases: At the time of the VSI there were standing fluids in the containment area. These fluids appeared to have been a combination of fuels and precipitation. Staining of the curb and immediately outside the curb was also observed. However, according to the Navy's comments on the Draft RFA, the tanks do not leak routinely and/or systematically.
References: 2, 11

Actions Taken: Concrete berms were reconstructed to comply with the SPCC Plan.

Comments: The Revised RFA and Draft Permit states that adequate secondary containment should be provided to prevent the spread of contamination to surface waters. Photos were taken on October 4, 1993 to compare to the VSI photo. The tanks were not leaking, there was no staining present, and the bermed area was in good condition. Also, no soil is present around the area. Only asphalt or concrete is present.

Recommendations: On June 30, 1999, EPA, DEQ, and the Navy agreed no further action was required for this SWMU (Partnering Team Meeting Minutes June 1999).

SWMU 63 Fuel Farm Platform Above Ground Waste Oil Tanks – Building 3867

Description: 2, 5000 gallon steel tanks installed after 1954. The tanks rest on stands and concrete pads in good repair. Staining was observed on the ground surface during the VSI.

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine if a release of hazardous constituents has occurred. An appropriate grid system should be constructed to include the visibly stained areas, plus an area of several feet around the stained zone. A surface and at least one shallow subsurface soil sample should be collected from each grid and analyzed for VOCs, SVOCs, and oil and grease. The Draft Permit states that soil samples should be collected and analyzed for VOCs and SVOCs.

This SWMU is incorrectly named in the Revised RFA. The correct names for these ASTs are 3105 A & B. Although these ASTs were used in the past for waste oil, they now store low-sulfur content diesel fuel. These tanks will be replaced with convault tanks as part of the SPCC upgrade. Any actions required will be investigated and evaluated through that program.

The VSI photo shows some staining on the concrete supports and the concrete at the base of the supports. This "release" is minor and there is no evidence or records that show that the release reached the surrounding soils. Photographs were taken on September 20, 1993 to compare to the VSI photo. The stain on the concrete support was not as dark and there were no stains on the concrete base or the surrounding soils.

Recommendations: Recommend no further action for this SWMU.
EPA, DEQ, and the Navy discussed this SWMU on June 30, 1999. EPA and DEQ agreed that as

long as the tanks are registered, no further action was required for this SWMU.
Currently, as part of the new Regional structure, a full review of all ASTs and USTs is being completed to ensure compliance with the newest regulations. The tanks are currently registered and the information will be updated with this current review.
Furthermore, a surprise EPA and DEQ inspection of the SPCC, AST, and UST programs was completed on July 28, 1999. No significant problems were discovered.
Therefore, no further action is recommended for this SWMU (Partnering Team Meeting Minutes June 1999 and March 2000).

SWMU 108 Steam Plant Fuel Tanks and Associated Pipes – Building 757

Description: The steam plant is housed in Building 757 between Murray Road and Amphibious Drive. The plant has provided steam heat to NAB since 1956. From 1956 to 1969 the steam plant burned approximately 40,000 to 45,000 tons of coal per year. In 1969, the plant switched to Burning No. 6 diesel oil (approximately 6 million gallons/ year). The plant switched back to coal in 1983. SWMU 108 consists of two 500,000 gallon above ground tanks and associated piping in front of the steam plant. These tanks and pipes were formerly used to provide No. 6 diesel fuel to the steam plant. The tanks were emptied and cleaned in 1994. Each tank sits in a basin formed by an earthen berm. Each basin has a storm water drain with a manual cut-off valve.

Date of Start-Up: Operation of the steam plant began in 1956.

Date of Closure: The steam plant will be phased over to natural gas within the next five years.

Wastes Managed: No. 6 fuel oil has been released from this unit.

Release Controls: The tanks set inside an earthen berm.

History of Releases: Oil stains were observed in the tank and pipeline areas. *References*: 1, 2

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine the extent of contamination. An appropriate grid system be constructed in and several feet around the stained areas. The samples should be analyzed for EP Tox Lead, VOCs, and Semi-Volatiles. The Draft Permit states that soil samples should be taken and analyzed for EP Tox, Lead, VOCs, and Semi-Volatiles.

Both the Revised RFA (in the conclusions section) and the Draft Permit call this SWMU 109. It should be properly called SWMU 108.

Photos were taken on October 1, 1993. Oil stains were not observed in the tank and pipeline areas.

The fuel lines from the steam plant to the above grade lines across the road from the steam plant were replaced in 1990.

The two tanks were inspected in 1995 and no evidence of leaks were detected. Monitoring was also completed in the area and no contamination or free product was found. The oil stains observed were most likely from infrequent overfills, not systematic tank or pipe leaks. The two tanks and associated piping are covered under the SPCC Plan and AST regulations. Any action required will be completed under those programs. Final disposition of the tanks is being investigated by LANTDIV. They may be removed from the base and recycled as scrap metal or reused as ASTs. However, they are no longer in operation. Any evidence of staining found upon removal will be investigated through the SPCC Program.

Recommendations: Recommend no further action for this SWMU.
EPA, DEQ, and the Navy discussed this SWMU on June 30, 1999. EPA and DEQ agreed that as long as the tanks are registered, no further action was required for this SWMU.
Currently, as part of the new Regional structure, a full review of all ASTs and USTs is being completed to ensure compliance with the newest regulations. The tanks are currently registered and the information will be updated with this current review.
Furthermore, a surprise EPA and DEQ inspection of the SPCC, AST, and UST programs was completed on July 28, 1999. No significant problems were discovered.
Therefore, no further action is recommended for this SWMU (Partnering Team Meeting Minutes June 1999).

SWMU 114 ACU-2 Drum Rack and Tank Area – Building 1522

Description: The ACU2 drum rack and tank area consists of a 100 square foot concrete area surrounded by a berm. A two-tier metal drum rack holds drums of liquids on their sides. Materials are dispensed from the drums. Empty drums are also stored on the rack. A 200 gallon above ground steel tank is also present. There is a storm water drain in the slab. No means of closing the drain was identified during the VSI.

Date of Start-Up: No start-up information is available for these units at the present time.

Date Of Closure: There are no plans to close these units.

Wastes Managed: Petroleum fuels and wastes are present at SWMU 114.

Release Controls: SWMU 114 rests on a concrete slab surrounded by a 4-inch concrete berm. There is a gauge on one side of the berm, thus reducing the site of the spill that the berm can effectively contain.

History of Releases: Oily substances have been released to the soil from the bermed area containing SWMU 114. *References*: 2

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine if a release of hazardous constituents has occurred. An appropriate grid system should be constructed to include the visibly stained areas, plus an area of several feet

around the stained zone. A surface and at least one shallow subsurface soil sample should be collected from each grid and analyzed for VOCs, SVOCs, and oil and grease. The Draft Permit states that soil samples should be collected and analyzed for VOCs and SVOCs.

If a release was observed during the VSI the extent and size of the problem was not identified. The concrete berm is pumped by a waste oil vac truck on an "as needed" basis. This SWMU is included in the SPCC Plan.

This area will be addressed as part of the SPCC upgrades. The berm will be demolished and removed. All stained soil will be excavated. Confirmatory sampling will be completed to confirm sufficient cleanup. Results will be submitted to TRO-DEQ as part of the SPCC Program.

Recommendations: Recommend no further action for this SWMU due its coverage under the SPCC Program. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes June 1999 and March 2000).

SWMU 115 ACU-2 Fuel Dispensing Area – Building 1522

Description: The ACU2 fuel dispensing area is adjacent to the ACU2 drum rack (SWMU 114). The ACU2 fuel dispensing area consists of two metal tanks, each with an approximate capacity of 200 gallons, elevated over a concrete slab.

Date of Start-Up: No start-up information is available for these units at the present time.

Date Of Closure: There are no plans to close these units.

Wastes Managed: Gasoline and diesel fuels are stored in the ACU2 Fuel Dispensing Area.

Release Controls: SWMU 115 rests on a concrete slab surrounded by a 6-inch concrete berm. There is a gauge on one side of the berm, thus reducing the site of the spill that the berm can effectively contain.

History of Releases: Releases from SWMU 115 were likely, since staining was apparent near the top of the berm. *References*: 2

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine the extent of contamination. An appropriate grid system be constructed in and several feet around the stained areas. The samples should be analyzed for EP Tox Lead, VOCs, and Semi-Volatiles. The Draft Permit states that soil samples should be taken and analyzed for EP Tox, Lead, VOCs, and Semi-Volatiles.

The Draft Permit incorrectly refers to this as SWMU 116. It should be referred to as SWMU

115.

ACU-2 personnel stated that the staining on the edge of the concrete berm was due to slow leakage from a fueling hose. The previous fueling hose was too long which permitted it to rub against the edge of the concrete berm. When the leak was discovered the hose was replaced. Any releases caused by the friction on the hose were minor. The berm is surrounded by an asphalt lot.

This area will be addressed as part of the SPCC upgrades. The existing tanks will be replaced with convaults. The berm will be partially demolished, and the rest filled in to form a raised platform for the new tanks. Although no visual evidence of contamination is currently present at this site, a total of four composite samples will be collected from all sides of the berm. The composites will be formed frm three grab samples collected on the long sides and two grab samples collected on the short sides of the berm. Sample results will be submitted to TRO-DEQ as part of the SPCC Program. DEQ approved close out report documentation is provided in Appendix B.

Recommendations: Recommend no further action for this SWMU due its coverage under the SPCC Program. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000).

SWMU 134 Portable Waste Oil Tanks – Piers 51-59

Description: This area is used to moor ships and provide utilities, transfer supplies, and load and unload cargo. The portable waste oil tanks are skid-mounted steel tanks with an estimated capacity of 400 gallons. The location and number of tanks in this area varies with the number of moored ships and the need to collect wastes.

Date of Start-Up: Start-up information for this area is not available at this time.

Date of Closure: No closure date has been established for the portable waste oil tanks. However, new tanks with secondary containment were ordered in 1994 and were in use by 1995.

Wastes Managed: The portable waste oil tanks are used to collect waste oils and oil/water wastes.

Release Controls: The portable waste oil tanks are fitted with filling funnels to prevent spills during waste transfer activities.

History of Releases: Stains in the pier area suggest that waste oils and other materials have been released to Little Creek and Desert Coves. Waste oils may have been released from the portable waste oil tanks. *References*: 2

Comments: The Revised RFA and Draft Permit suggested that a secondary containment device be constructed around the mobile tanks.

New portable waste oil tanks with the proper secondary containment are now used at the piers. This SWMU is covered under the SPCC Plan.

Recommendations: Recommend no further action for this SWMU. Secondary containment on the tanks is currently used and the tanks are covered under the SPCC Plan.
On June 30, 1999, EPA and DEQ agreed no further action was required for this SWMU (Partnering Team Meeting Minutes June 1999).

SWMU 145 Fuel Oil Tank – Building 3029

Description: The fuel oil tank is located adjacent to Building 3029 (Fire Station 1). The tank rests on two concrete cradles, about two feet above the ground. The tank is constructed of steel and holds about 500 gallons of fuel oil, which is used in Fire Station 1. Leaks from the tank appear to be routine and systematic.

Date of Start-Up: The start-up date for this unit is not available at this time.

Date of Closure: The AST was removed and replaced with a compliant AST by 1993. Building 3029 was demolished in 1995.

Waste Managed: The unit holds fuel oil that is used in Fire Station 1.

Release Controls: The unit is constructed of steel.

History of Releases: Stains were observed during the VSI on the concrete pad and grass area immediately below the dispensing valve of the tank. The release appeared to be a routine event.
References: 2

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine the extent of contamination. An appropriate grid system be constructed in and several feet around the stained areas. The samples should be analyzed for EP Tox Lead, VOCs, and Semi-Volatiles. The Draft Permit states that soil samples should be taken and analyzed for EP Tox, Lead, VOCs, and Semi-Volatiles.

The Draft Permit refers to this SWMU as 146. It should be referred to as SWMU 145.

This SWMU no longer exists. The area where building 3029 (Fire Station number 1) was located is now an open field. The tank has been removed and there is no evidence of any oil staining. Any contamination that was present will be masked due to the demolition activities.

Recommendations: Recommend no further action for this SWMU.
On June 30, 1999, EPA and DEQ agreed no further action was required for this SWMU pending a site visit (Partnering Team Meeting Minutes June 1999).

5 - HRSD PERMIT, OWS

The NAB sanitary sewer system is regulated by two Industrial Wastewater Discharge Permits granted by Hampton Roads Sanitation District (HRSD). Permit # 0102 is issued directly to the Commanding Officer of NAB (soon to be transferred to Commander, Naval Base Norfolk) and addresses five pump stations which discharge directly to HRSD. Permit # 0208 is issued to the Commanding Officer of the Public Works Center, Norfolk (soon to be transferred to Commander, Naval Base Norfolk) and addresses effluent from the Steam Plant Complex.

PERMIT #0102

The recurring management requirements include:

1. Collection and analysis of weekly grab and composite samples at one pump station for pH, Cu, and Zn.
2. Collection and analysis of monthly grab samples at two pump stations for pH.
3. Collection and analysis of semi-annual composite samples at two pump stations for Total Toxic Organics.
4. Maintenance of a daily inspection log for 5 pump stations.
5. Weekly inspection of wetwells in four pump stations for oil and grease accumulation and removal of same.
6. Pretreatment facilities as referenced in the Sanitary Sewer Pretreatment Device Management Plan (as developed by NAB personnel) shall be inspected and maintained as required. Devices include 34 oil/water separators, three photographic silver recovery units, and one dental amalgam trap.

PERMIT # 0208

The recurring management requirements include:

1. Collection and analysis of monthly grab samples from the North coal pile leachate treatment lagoon for pH and Zn.
2. Collection and analysis of grab samples for As, Ni, Zn, and pH from the South coal pile leachate treatment lagoon during each discharge event.
3. Collection and analysis of monthly pH grab samples from sanitary sewer manhole outside the Steam Plant Complex.
4. Maintenance of a log of discharge compliance for all lagoon discharges.
5. Maintenance of automated pH adjustment/monitoring system for both lagoons.

SWMUs 48, 65-75 Facility Oil/Water Separators

Description: A total of 15 oil water separators were observed during the VSI. These units are representative of oil/water separators throughout the facility. A representative inventory is shown below:

SWMU	Building and Name	Installation Date	Construction Material
48	Port Ops – Building 3896	?	?
65	Assault Craft Unit 4 – Building 3817	1987	Concrete
66	Beachmaster Unit 2 – Building 3142	1944	Concrete
67	CB301 Seabee Vehicle Maintenance Light Shop	NA	Concrete
68	CB301 Seabee Vehicle Maintenance Heavy Shop	NA	Concrete
69	Harbormaster's Office – Building 3894	NA	Concrete
70	PWC Sheet Metal Shop – Building 3650	1945	Concrete
71	PWC Transportation Garage – Building 3661	NA	Concrete
72 (3)	Special Boat Units – Buildings T-9, 10, 11	NA	Concrete
731)?74)?74	Asphalt Unloading Area Building 3187	NA	Concrete
75	Engine Overhaul Shop – Building 3876	NA	Concrete

Date of Closure: There are no plans for closure of these units.

Wastes Managed: The units receive water and oils from cleaning, maintenance, washing, and other operations.

Release Controls: The units observed during the VSI appeared to be in good condition. After fluids are put through the oil/water separators, the water is released into the sanitary sewer.

History of Releases: No releases were reported in the files for the units. The condition of the units could not be determined during the VSI, however, no evidence of straining was noted at the surface. *References*: 2

Comments: The Revised RFA and Draft Permit suggested testing the integrity of the tank and associated piping to verify the integrity of the unit. Testing should be completed through an appropriate method (e.g., pressure testing). If the unit is found to be leaking or evidence of prior releases is discovered during integrity testing, soil sampling should be conducted at locations where cracks were identified. Samples should be analyzed for volatile and semi-volatile organic compounds.

NAS Oceana has negotiated a RCRA Corrective Action Consent Order. Initially all of Oceana's Oil/Water Separators were listed as SWMUs. However, Oceana has successfully negotiated to exclude the Oil/Water Separators from their active SWMUs. Their justification is as follows:

> "Oil/Water Separators are either connected to the sanitary sewer system and covered by an HRSD Permit, or discharge to the Storm Water System and are covered by an NPDES Permit. In either case both the draft Subpart S and the RFA guidance state that it is not the EPA's position to include releases permitted under other environmental laws in the corrective action program."

The technical feasibility of testing the Oil/Water Separators would have to be determined and pass/fail criteria for tightness testing Oil/Water Separators would have to be provided.

All of the Base Oil/Water Separators discharge to the sanitary sewer system and are therefore covered under the HRSD Permit. The Oil/Water Separators are inspected and cleaned as necessary to prevent releases to the sanitary sewer system.

Recommendations: Recommend no further action for these SWMUs.
EPA, DEQ, and the Navy discussed these SWMUs on June 30, 1999. Concern was expressed as to the cleaning and maintenance of the OWS. All OWS on-base are inspected by environmental personnel monthly. Any cleaning or maintenance required is coordinated through environmental. A list of the cleaning/maintenance schedule from 1991 is provided as a point of reference for operations in the past.
Recommend no further action for these SWMUs.

SWMU 109 Steam Plant Floor Drains – Building 757

Description: The steam plant is housed in Building 757 between Murray Road and Amphibious Drive. The plant has provided steam heat to NAB since 1956. From 1956 to 1969 the steam plant burned approximately 40,000 to 45,000 tons of coal per year. In 1969, the plant switched to Burning No. 6 diesel oil (approximately 6 million gallons/ year). The plant switched back to coal in 1983. Floor drains inside the steam plant were connected to the storm water sewer which drains to Little Creek Cove. Caustic soda from water pH adjustment activities inside the plant entered the floor drains.

Date of Start-Up: Operation of the steam plant began in 1956.

Date of Closure: The steam plant will be phased over to natural gas within the next five years.

Wastes Managed: Caustic soda entered the floor drains.

Release Controls: No release controls were identified for this unit.

History of Releases: Caustic soda discharged to the storm water sewer through the floor drains: the storm sewer is connected to Little Creek Harbor. *References*: 1, 2

Comments: The Revised RFA and Draft Permit suggested that water samples entering the storm drain be collected and analyzed for pH due to caustic sodas that may be entering the unit. The integrity of the drain should also be determined by removing the grate and observing the condition of the concrete. The Draft Permit also stated that this should be documented in the VI Work Plan.

The pH neutralization area no longer exists. Renovations have been made to the Steam Plant in the last ten years. Additionally, drains from the steam plant now enter the sanitary sewer system and are covered by the HRSD Permit.

Recommendations: Recommend no further action for this SWMU due to its coverage under the

HRSD Permit. In March 2000 no further action was recommended by EPA and DEQ pending verification that the floor drains have been sealed. Confirmation that drains in the rear of the building have been sealed was provided during the March 2000 Partnering Meeting (Partnering Meeting Minutes March 2000).

6 - VPDES PERMIT

The DEQ, Water Division, issued VPDES Permit No. VA0079928 to NAB Little Creek on June 13, 1994. The permit would expire on June 13, 1999. A VPDES Permit reapplication package was provided to DEQ on December 14, 1998.

The current permit addresses 28 stormwater outfalls with associated industrial activity and one outfall with industrial process effluent. Of these 29 discreet discharges, 20 have recurring monitoring and reporting requirements. The monitoring requirements range from monthly to once-per-permit-term (5 years) and include water quality parameters, metals, and toxicity testing with monthly reporting to DEQ.

In the shipbuilding and ship repair areas extensive BMPs are in place to prevent runoff from entering storm drains. In other areas, periodic inspections by environmental personnel will identify potential problems.

SWMU 97 CB301 Seabee Vehicle Maintenance Facility Storm Drain

Description: The Seabees operate two vehicle maintenance shops in Building CB301; a "light shop" and a "heavy shop." The light shop is used for automotive maintenance. The heavy shop is used for construction equipment maintenance. The storm drain is located in the scrap storage area (SWMU 96) and is used to remove storm water runoff. The storm water is discharged to Little Creek Channel, which then flows into the Chesapeake Bay. At the time of the VSI, oil from a forklift parked near the drain was flowing into the drain.

Date of Start-Up: The SWMUs in this area went into operation after 1984.

Date of Closure: There are no plans for closure of these units.

Wastes Managed: Wastes managed at the Seabee Vehicle Maintenance Facility Storm Drain include storm water from the scrap storage area (SWMU 96).

Release Controls: No release controls were identified for the Seabee Vehicle Maintenance Facility Storm Drain.

History of Releases: At the time of the VSI, oil was entering the storm drain (SWMU 97).
References: 1, 2

Actions Taken: According to the Navy's comments on the Draft RFA, the oil stained soil has been removed and oil is precluded from entering the storm drain.

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine if a release of hazardous constituents has occurred. An appropriate grid system should be constructed to include the visibly stained areas, plus an area of several feet

around the stained zone. A surface and at least one shallow subsurface soil sample should be collected from each grid and analyzed for VOCs, SVOCs, and oil and grease. The Draft Permit states that soil samples should be taken and analyzed for Volatiles and Semi-Volatiles.

Since this SWMU involves a storm drain it is covered under our VPDES Permit.
In general, storm drains or pipes are not cleaned unless a blockage creates backup. There was no precedent to clean up soil near a storm drain or OWS if staining was found. The outfalls in the CB areas are not specifically sampled as part of the VPDES permit because no industrial activities are completed in the area.

The Seabee compounds have drastically changed over the last ten years due to demolition and construction activities. The VSI photo is an extremely poor close-up shot of a storm drain. Due to the vague narrative description of this SWMU in the Revised RFA and the poor perspective provided in the VSI photo it would be nearly impossible to relocate this SWMU. No staining was observed in the area behind building 301.

Recommendations: On March 10, 1999, EPA, DEQ, and the Navy visited this SWMU. The exact storm drain could not be located. EPA will try to locate the original photo from the RFA to further assist in locating the drain.
On May 11, 1999, EPA, DEQ, and the Navy revisited the site with the RFA photo in hand. The location of the SWMU was determined to be the storm drain directly west of the north west corner of CB301. A sludge sample will be collected from the storm drain and sampled for TPH.
In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes June 1999 and March 2000).

SWMU 128 Port Ops Lube Oil Dispensing Area Storm Water Drain – Building 3896

Description: Port Ops, Building 3896, houses the engine overhaul shop for a boat maintenance area. Boat bilges are emptied of residual bilge water, hulls are ground by hand and painted, and engine maintenance is performed in this area. The storm drain carries runoff from a lube oil dispensing area into the cove.

Date of Start-Up: Start-up information for this SWMU is not available at this time.

Date of Closure: Lube oil is no longer managed in this area.

Wastes Managed: The lube oil dispensing area storm water drain is used to manage runoff from the lube oil dispensing area.

Release Controls: No release controls were identified for this unit.

History of Releases: The lube oil dispensing area storm water drain is stained, suggesting that oil from the lube oil dispensing area has been released from SWMU 128 to the cove. *References*: 2

Actions Taken: During the RRR Sampling event in 1995, this SWMU was investigated. The Work Plan included two samples to be collected from the sludge in the bottom of the storm drain. However, upon investigation of the drain, no sludge was present. Therefore, no samples could be collected. This SWMU is also regulated under the VPDES Program/Permit. See figure for SMWU location.

Comments: The Revised RFA suggested that sampling be conducted near the drain for sludge that has accumulated from surface runoff. An appropriate grid system should be constructed, with one sample collected per grid. The samples should be analyzed for lead, semi-volatiles, and pH. In addition, consideration should be given to provide containment of the satellite accumulation area so that releases will not directly enter the storm water drain. The Draft Permit states that sludge sampling should be conducted in the area near the drain. Samples should be analyzed for lead, semi-volatiles, and pH. A plan should be developed for containment of the satellite accumulation area so that releases will not directly enter the storm water drain.

The storm water drain is regulated under the VPDES Program. Appropriate Best Management Practices have been taken to preclude wastes from entering the storm drain. Additionally, the paint stains observed during the VSI were on concrete. There is no evidence that paint wastes have reached the storm drain.

Recommendations: On March 10, 1999, EPA, DEQ, and the Navy visited this SWMU. The compound was in good condition, and there was no evidence that releases could have occurred to any soil in the area. EPA and DEQ agreed that no further action was required for the soil or groundwater near the site. However, due to reported releases to the storm drain, sediment samples directly under the outfall may be required. A total of 6 samples should be collected from 3 locations at two depths, from 0-4" and 12-18", and analyzed for Metals and SVOCs. The three locations should be in the form of a triangle, with one apex directly under the outfall. If rip rap is encountered, the samples should be moved away from the outfall, but not beyond the overhang of the pier. The BTAG may visit the site on August 10, 1999. The recommendation may change slightly as a result of the visit. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes June 1999 and March 2000).

SWMU 147 Facility Storm Sewers/Drains

Description: Storm sewers/drains exist throughout the facility. They are used to collect surface runoff from areas at the base, and then discharge to the coves and Little Creek Channel, or to storm swales which in turn discharge to these surface water bodies. All of the storm sewers/drains have been covered by a VPDES Permit since July 1988.

Date of Start-Up: The units have been installed at different times since the inception of the facility.

Date of Closure: There are no plans to close these units.

Waste Managed: The units accept stormwater runoff which may contain oily wastes, paint wastes, and other wastes which are generated at NAB.

Release Controls: The release controls for the units are not currently known.

History of Releases: During the VSI, many drains were observed that were stained, particularly in the pier areas. *References*: 2

Comments: The Revised RFA suggested that the construction materials and age of all storm sewers/drains should be reviewed. The facility was in the process of obtaining an NPDES permit from the State. No further actions regarding discharge to surface water were suggested for the RFA. The Draft Permit also stated that the construction and age of all storm sewers/drains should be reviewed and it should be confirmed that a NPDES permit was obtained.

The Storm Water System is covered by a VPDES Permit. Both the draft Subpart S and the RFA guidance state that it is not the EPA's position to include releases permitted under other environmental laws in the corrective action program.

Recommendations: Recommend no further action for this SWMU due to its coverage under the VPDES Program.

7 - PROPOSED FOR NO FURTHER ACTION

The following SWMUs are proposed for no further action as a result of recent field investigations or the evaluation of new information relevant to the likelihood of release at the site or risk from possible releases.

Old SWMU 8 Base Exchange (East Annex) Gas Station Dumpster – Building 3615

Description: The east annex gas station is located at Building 3615. Several types of waste have been disposed in the dumpster located in the parking lot behind the station. The gas station stores spent batteries (SWMU 32) prior to their pick-up for recycling. The station also has a waste accumulation area (SWMU 33) with drums of water taken from the gasoline storage tanks.

Date of Start-Up: The date of start-up for the unit is not presently available.

Date of Closure: There are no plans for closure of this unit.

Wastes Managed: During the VSI, various petroleum oil-laden items were disposed in the dumpster, including auto engine parts, chassis, and other items.

Release Controls: The dumpster is located near the perimeter of a concrete parking-lot. The concrete is in good condition and bordered by a 3-inch high curb.

History of Releases: Oily stains were present on the dumpster, on the concrete surface, and over the curbed surface and into a grassy area during the VSI. *References*: 1,2

Actions Taken: In the Navy's comments on the Draft RFA in August 1988, it was reported that the oil stains from the concrete and curb, and stained soil had been removed.

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine if a release of hazardous constituents has occurred. An appropriate grid system should be constructed to include the visibly stained areas, plus an area of several feet around the stained zone. A surface and at least one shallow subsurface soil sample should be collected from each grid and analyzed for VOCs, SVOCs, and oil and grease. The Draft Permit stated that the VI Work Plan shall contain documentation that the soil has been removed and disposed of properly. Although no specific records are available concerning the previous disposal of petroleum contaminated soils it was routine practice to sample the soil and dispose of it according to the sample results. On September 20, 1993, photos were taken to compare with the VSI photo. The dumpster was not present. No stains were observed on the grass area behind the curb.

Recommendations: On March 9, 1999 EPA and DEQ agreed no further action was required for this SWMU (Partnering Team Meeting Minutes, May 1999 and March 1999).

SWMU 11 Harbormaster Shop Scrap Metal Dumpster – Building 3894

Description: Shops separate scrap metal from the rest of the waste stream and dispose of it in this unit.

Date of Start-Up: The date of start-up for this unit is not currently available.

Date of Closure: In the Navy's comments on the Draft RFA in August 1988, it was reported that the dumpster had been removed.

Wastes Managed: Scrap metal is separated from the rest of the solid waste generated from shop operations and placed in these dumpsters. Some hazardous constituents may have been present in oils in SWMU 11.

Release Controls: The unit is constructed of steel and is resting on concrete or asphalt surfaces of good integrity.

History of Releases: Oily stains were observed on the soils at the base of SWMU 11 during the VSI. *References*: 2

Actions Taken: In the Navy's comments on the Draft RFA in August 1988, it was reported that the dumpster had been removed, oil contaminated soil had been removed and the area had been covered with asphalt.

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine if a release of hazardous constituents has occurred. An appropriate grid system should be constructed to include the visibly stained areas, plus an area of several feet around the stained zone. A surface and at least one shallow subsurface soil sample should be collected from each grid and analyzed for VOCs, SVOCs, and oil and grease. The Draft Permit states that the VI Work Plan shall contain documentation that the soil has been removed and disposed of properly. Although no specific records are available concerning the previous disposal of petroleum contaminated soils it was routine practice to sample the soil and dispose of it according to the sample results. Photos of the area were taken on October 4, 1993. There were no stains on the soil and no evidence of a release in the area.

Recommendations: On March 9, 1999 EPA and DEQ agreed no further action was required for this SWMU (Partnering Team Meeting Minutes, March 1999 and May 1999).

SWMU 12 The Former Wharf Building Shop – Building 3165

Description: The former wharf building shop was located near Building 3165. According to PWC personnel, the main shop was in Building 3171 and material storage for the wharf builders was in 3176. See figure for location. Construction activities at this unit included installation of pilings and fender systems at piers on NAB Little Creek. A Pentachlorophenol (PCP) dip tank (SWMU 15, IR Site 13) used to treat lumber was located adjacent to Building 3165E from 1954

to 1974. This 300-400 gallon tank of PCP was used until 1974. The tank was removed to Camp Allen as salvage in 1982. Old pilings that have been removed from piers were deposited in a designated section of the Amphibious Base Landfill (SWMU 123, IR Site 7). The site of this former unit is now a paved parking lot.

Date of Start-Up: The former wharf building shop began operating about 1945.

Date of Closure: The estimated date the unit became inactive was 1974.

Wastes Managed: Pentachlorophenol (EPA listed hazardous waste number U242) was used as a preservative on lumber in the maintenance and repair of wharves and waterfront structures. It has not been used since the unit ceased operating.

Release Controls: There were no release controls identified for this area.

History of Releases: The site is presently covered by an asphalt parking lot and no visual evidence of release was noted during the VSI. However, no formal closure or follow-up sampling was conducted at the time the unit was razed. *References*: 1,2

Comments: The Revised RFA suggested the Navy provide documentation on demolition procedures. If deemed necessary after review of these procedures, shallow subsurface soil sampling should be conducted to determine if residual PCP contamination exists. An appropriate grid system should be constructed and soil samples should be analyzed for PCP. The Draft Permit states that soil samples should be tested for PCP. Photos were taken of this area on September 29, 1993 and can be compared to the VSI photo. On October 7, 1993, base environmental staff spoke with the former foreman of the former wharf building shop. The shop was used as a work center for the employees and to store tools and equipment. PCP was never introduced to the shop. Once the wood was dipped in the PCP tank and set out to dry (SWMU 15 and IR Site 13) it was then taken to the site where the work was to be performed.

Recommendations: Recommend no further action for this SWMU for the following reasons:

1. No releases or staining was identified during the VSI.
2. There is no evidence that PCP was ever used in this area.
3. As part of the IR Program, sampling has been completed in the area and no PCP contamination was detected in the soil.
4. The area is part of CERCLA IR Site 13. It was determined through the IR Program that no action was required in this area due to lack of contamination.

On March 9, 1999 EPA and DEQ agreed no further action was required for this SWMU (Partnering Team Meeting Minutes, March 1999 and May 1999).

SWMU 18 PWC Trans. Garage Spent Battery Shop, Collection Area – Bldg 3661

Description: All PWC transportation maintenance is conducted at Building 3661. Batteries are held in both the battery shop and on a wooden platform outside the shop.

Date of Start-Up: The new transportation garage (Building 3661) was constructed in 1974.

Date of Closure: Batteries are currently stored inside a berm to contain potential releases.

Wastes Managed: Spent batteries, which are picked up by PWC on a regular basis.

Release Controls: The pitted concrete floor in the battery shop SWMU 18 is evidence of acid spills, although the cement floor seems to have contained the spills. Spent batteries are placed outside the shop on a wooden platform that rests on the edge of the asphalt parking lot.

History of Releases: Staining from the spent battery collection area on the grassy area adjacent to the unit was observed. *References*: 1, 2

Actions Taken: According to the Navy's comments on the Draft RFA, the stained soil at SWMU 18 has been removed.

Comments: The Revised RFA suggested that soil sampling be conducted to determine if releases of hazardous constituents has occurred. An appropriate grid system should be constructed in the grassy areas immediately adjacent to the asphalt pavement with a minimum of one sample collected per grid. Samples should be analyzed for SVOCs, Metals, and PCBs. The Draft Permit states that the VI Work Plan shall contain documentation that the soil has been removed and disposed of properly. Although no specific records are available concerning the previous disposal of petroleum contaminated soils it was routine practice to sample the soil and dispose of it according to the sample results. Photos were taken on October 1, 1993. No stains were visible where the batteries are currently stored.

Recommendations: On March 10, 1999 EPA, DEQ, and the Navy visited this SWMU. Using the pictures from 1988, the battery storage area was determined to be to the west of the fenced drum storage area. The area behind where the batteries were stored is a drainage area and may have received runoff from leaking batteries. Two grab samples will be collected in the grassy area behind the old batteries, composited, and tested for lead and zinc. A picture from 1993 indicated another battery storage area. One grab sample will be collected from the grassy area behind and also tested for lead and zinc. EPA and DEQ agreed that if the sample results are not indicative of a release, no further action will be required for the SWMU. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000; sampling discussed May 1999).

SWMU 20 PWC Transportation Garage – Salvage Parts Storage Area – Bldg 3661

Description: All PWC transportation maintenance is conducted at Building 3661. The salvage parts storage area is located in a metal shed and a dumpster behind Building 3661.

Date of Start-Up: The new transportation garage (Building 3661) was constructed in 1974.

Date of Closure: There are no plans for closure of these units.

Wastes Managed: Mufflers, paint cans, oily substances. These wastes are all picked up by PWC on a regular basis.

Release Controls: The salvaged parts storage area is contained in a metal shed and a dumpster. The shed rests on skids on the asphalt parking lot. The metal dumpster rests on the asphalt lot also.

History of Releases: Staining was present around the salvage parts storage area (SWMU 20).
References: 1, 2

Actions Taken: From October 25-31, 1995 this site was sampled for Relative Risk Ranking using DOD's model. Two surface soil and one groundwater sample were collected and analyzed for VOCs, SVOCs and TAL Metals. See the figure for SWMU and sampling locations. The following table lists the compounds detected.

1995 Relative Risk Ranking Sampling Results

SWMU 20	LC03-S1	LC03-S2	LC03-W1
VOLATILES (µg/kg, µg/L)			
Acetone	38	11 JB	59
Benzene	ND	ND	36
SEMIVOLATILES (µg/kg, µg/L)			
Diethylphthalate	ND	ND	1 J
METALS (mg/kg, µg/L)			
Aluminum	19800	8070	235
Antimony	1.3 BN	2 BN	5.8 B
Arsenic	2.8	1.1 B	ND
Barium	74.9	46.3 B	10.2 B
Beryllium	0.45 B	0.33 B	ND
Cadmium	ND	0.7 B	ND
Calcium	581	550	16500
Chromium	20.9	9.4	2.3 B
Cobalt	3.1 B	1.5 B	1.7 B
Copper	5.8	5 B	ND
Iron	13900	6170	5720
Lead	11.1	10.3	3
Magnesium	1350	534	4670
Manganese	52.1	34.2	552
Nickel	9.5	5.6 B	66.7
Potassium	738	221 B	682 BE
Selenium	1.7	1 B	2.9 B
Sodium	123 B	40.4 B	9120 E
Vanadium	25.8	10.4 B	ND
Zinc	34.2	64.2	49.3

Comments: The Revised RFA suggested that soil sampling be conducted to determine if releases

of hazardous constituents has occurred. An appropriate grid system should be constructed in the grassy areas immediately adjacent to the asphalt pavement with a minimum of one sample collected per grid. Samples should be analyzed for SVOCs, Metals, and PCBs. The Draft Permit states that soil samples should be taken and analyzed for SVOCs, Metals, and PCBs. The site was visited on October 1, 1993. A different dumpster is currently in use for the salvage parts storage area. The dumpster is located in a slightly different area and no stains were present around the current dumpster or the previous location. There is no evidence that PCBs were used in this area.

Recommendations: On March 10, 1999 EPA, DEQ, and the Navy visited this SWMU. The likely locations of the dumpster and shed were determined. Even though the area around the former location of the shed was not sampled, no staining was seen in the photograph from the VSI. Runoff from around the shed would have flowed to the areas sampled in 1995 around the dumpster. Due to lack of significant contamination detected in 1995, lack of staining reported in subsequent visits in 1993, 1995, and 1999, EPA and DEQ agreed that no further action is required near the dumpster or the shed(Partnering Team Meeting Minutes, March 1999 and May 1999).

SWMU 21 PWC Transportation Garage – Lubricating Oil Storage Area – Bldg 3661

Description: All PWC transportation maintenance is conducted at Building 3661. Several 55-gallon drums inside a fence area behind Building 3661 hold lubricating oils (SWMU 21).

Date of Start-Up: The new transportation garage (Building 3661) was constructed in 1974.

Date of Closure: There are no plans for closure of these units.

Wastes Managed: Oil and grease from oil storage racks. These wastes are picked up by PWC on a regular basis.

Release Controls: The drums of rusted lubricating oil rest directly on the bare ground behind a locked chain-link fence. A 3-inch high concrete curb surrounds the unit. The unit also has a concrete base.

History of Releases: Oily stains were observed inside and over the curbing at the lubricating oil storage area. *References*: 1, 2

Actions Taken: According to the Navy's response to the Draft RFA, the oil drums and oil contaminated soil were removed and disposed.

Comments: The Revised RFA suggested that soil sampling be conducted to determine if releases of hazardous constituents has occurred. An appropriate grid system should be constructed in the grassy areas immediately adjacent to the asphalt pavement with a minimum of one sample collected per grid. Samples should be analyzed for SVOCs, Metals, and PCBs. The Draft Permit states that the VI Work Plan shall contain documentation that the soil has been removed and

disposed of properly. Although no specific records are available concerning the previous disposal of petroleum contaminated soils it was routine practice to sample the soil and dispose of it according to the sample results. Photos were taken on October 1, 1993 to compare to the VSI photo. At the time of the photo the drums present were not leaking. The containment area was cleaned out during the summer of 1993. Although there was minor staining present behind the PWC transportation garage, it does not appear to be systematic or routine. The staining is contained to the asphalt.

Recommendations: On March 10, 1999, EPA, DEQ, and the Navy visited this SWMU. It was confirmed that the "3 inch high concrete curb" did have a concrete base. The area the drums were stored in is a berm. In 1988 during the VSI, the berm must have had a significant amount of dirt inside so that it appeared the drums were on bare ground. Due to the integrity of the berm, release to the environment was unlikely. EPA and DEQ agreed no further action was required for this SWMU (Partnering Team Meeting Minutes, March 1999 and May 1999).

SWMU 23 Rifle Range

Description: The rifle range is located near Building 3060A. It is designed for fire arms practice. Weapons are discharged at targets located on a 25 foot high bunker of sand. The bunker is adjacent to the beach along the Chesapeake Bay. Some of the soils from the bunker have been excavated and placed in a plastic-lined waste pile located several feet to the west. The State of Virginia has concerns that EP Tox metals, such as lead, may be leaching into the soil and groundwater.

Date of Start-Up: The date of start-up for the unit is not presently available.

Date of Closure: The Rifle Range is still active and there are no plans to close it in the forseeable future. However, the Navy received official notification from the Virginia Department of Environmental Quality on July 27, 1995, that the Department concurred with the Navy that the Lead Waste Pile had been closed in accordance with the approved closure plan and the Virginia Hazardous Waste Management Regulations. The letter further stated that the Navy had complied with all of its requirements and termination of the Enforcement Order had been granted. See closure letters in Appendix C.

Wastes Managed: Metals (such as lead) and residual explosives from shell fragments are present at the unit.

Release Controls: Soils from the sand bunker containing shell fragments have been removed and placed to the immediate west in a plastic-lined pile and covered with a plastic sheeting.

History of Releases: Shell fragments were observed during the VSI around the unit.
References: 2, 11

Actions Taken: The Lead Waste Pile has been removed in accordance with the DEQ approved closure plan. Clean closure was approved by DEQ. See closure letters from July 27 and July 5,

1995 in Appendix C. Best Management Practices are ongoing at the Rifle Range according to Navy regulations. Phosphorous has been added to the berm to bind the lead and render it virtually insoluble. Because the solubility depends on the pH of the soil, testing is conducted to ensure the berm maintains proper pH. The face of the berm was also resurfaced to reduce the ricochet hazard.

Comments: The Revised RFA stated that the facility was currently undergoing discussions with the Virginia Department of Waste Management with regard to remediation of the area. No further actions were suggested until the negotiations were completed. The Draft Permit required submission of an environmental site characterization report with the VI Work Plan.

Because the Rifle Range is active and there are no plans for closure, it cannot be considered a Solid Waste Management Unit because military munitions are not solid wastes. According to the Military Munitions Rule published in the Federal Register on February 12, 1997 (see Appendix C) section 266.202 (a) A military munition is not a solid waste when: (1) Used for its intended purpose, including: (i) Use in training military personnel or explosives and munitions emergency response specialists. As clarified in the "Response to Comments" section of the final rule, EPA stated that "The Agency is maintaining its position that munitions that are fired are products used for their intended purpose, even when they hit the ground since hitting the ground is a normal expectation for their use." This means that even when the spent munitions are on the ground, they are not solid wastes until they are removed or collected. If the Navy removes material from the berm, it will be handled appropriately. However, until the range is closed, the spent munitions are not solid wastes. According to section 265.1202 cleanup after closure is required. Also, DOD and EPA are currently negotiating a Range Rule that will include a CERCLA-like response for closed ranges. The rule will also include portions of RCRA. Because these two rules clearly regulate cleanup after closure of the range, independent of CERCLA and RCRA, there is no need to maintain this area as a Solid Waste Management Unit. If/when the range is closed, response will comply with the Military Munitions and Range Rule as appropriate.

Recommendations: Recommend no further action for this SWMU due to the approved closure of the Lead Waste Pile by DEQ in July 1995, the EPA definition that munitions are not solid wastes as described above, and the closure requirements under the range rule, independent of RCRA and CERCLA . This SWMU was discussed by the Navy, EPA, and DEQ in May 2000; the SWMU is an active range and will be addressed in the Findings of Fact of the FFA for no further action as active ranges are handled under DoD Policy.

SWMU 32 NEX (East Annex) Gas Station – Battery Storage Area – Bldg 3615

SWMU 33 NEX (East Annex) Gas Station – Satellite Accum. Area – Bldg 3615

Description: The east annex gas station is located in Building 3615. The gas station stores spent batteries (SWMU 32) prior to their pick-up by a contractor for recycling. The spent batteries are stacked two to three high on a concrete and gravel surface adjacent to the station. They are located inside a locked fence. The station also has a satellite accumulation area (SWMU 33) which contains drums of water taken from the gasoline storage tanks. The drums are held in the

same area as the spent batteries. Several types of metal waste have also been disposed in the dumpster located in the parking lot (SWMU 8).

Date of Start-Up: The date of start-up for these units is not currently available.

Date of Closure: There are no plans for closure of these units.

Wastes Managed: The gas station stores spent automobile batteries (SWMU 32). As many as 100 automotive batteries are taken in at the station per month for exchange. The batteries are exchanged about once a month with the wholesaler who takes the entire battery, including the electrolyte, back to the manufacturer for recycling. The gas station also stores drums of gasoline-contaminated water removed from the underground gasoline storage tanks. There was greater than 55 gallons of wastewater stored at the site during the VSI (SWMU 33).

Release Controls: SWMU 32 - The batteries are stored in an uncovered fenced area at the side of the station. They are stacked on a wooden pallet that is 90% on concrete and 10% on gravel. SWMU 33 - The drums of wastewater are stored on concrete in the same fenced area as the batteries. PWC removes the drums on a regular basis.

History of Releases: The units are not in good condition. An assessment of release could not be made due to the inaccessibility of the areas. *References*: 1, 2

Actions Taken: From October 25-31, 1995 these sites were sampled for Relative Risk Ranking using DOD's model. One surface soil sample was collected for each site and analyzed for SVOCs and TAL Metals. The soil sample from SWMU 33 was also analyzed for VOCs. See the figure for SWMU and sampling locations. The following table lists the compounds detected.

1995 Relative Risk Ranking Sampling Results

SWMUs 32, 33	LC04-S1	LC05-S1
VOLATILES (µg/kg, µg/L)	NA	ND
SEMIVOLATILES (µg/kg, µg/L)		
Diethylphthalate	ND	9 J
Phenanthrene	10 J	ND
Pyrene	13 J	16 J
Benzo(a)anthracene	3 J	ND
Chrysene	7 J	ND
Benzo(a)pyrene	35 J	27 J
Benzo(g,h,i)perylene	66 J	90 J
METALS (mg/kg, µg/L)		
Aluminum	709	4260
Antimony	0.71 BN	0.8 BN
Arsenic	0.98 B	2.2 BN
Barium	16.8 B	24 B
Calcium	93 B	480
Chromium	2.4	7.3
Cobalt	0.25 B	1.7 B

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Copper	3 B	11.6
Iron	2900	6530
Lead	47.7	30.4
Magnesium	224	791
Manganese	11.7	81.5
Nickel	1.4 B	3.6 B
Potassium	547	505
Selenium	ND	1.2
Sodium	25 B	25.7 B
Vanadium	3.8 B	9.7 B
Zinc	13.3	30.3

Comments: The Revised RFA suggested that two random subsurface soil samples be obtained immediately under the unit and analyzed for the above mentioned constituents SVOCs, pH, and Metals. The Draft Permit states that soil samples should be analyzed for Semi-Volatiles, pH, and Metals.

Recommendations: On March 10, 1999, EPA, DEQ, and the Navy visited this site. Due to the lack of release or stains reported in the RFA, the very small area potentially affected, and the lack of significant contamination detected in 1995, EPA and DEQ agreed that no further action was required for this SWMU (Partnering Team Meeting Minutes, March 1999 and May 1999).

SWMU 76 Hazardous Waste Storage Pad – Building 3091

Description: This unit of Public Works is located at Building 3091 and is a RCRA-permitted storage pad. The PWC hazardous waste group is responsible for pickup and arranges offsite disposal of NAB Little Creek hazardous wastes. All base and tenant activity wastes, except for photographic, ordnance, and Boone Clinic wastes, are handled by this unit. The unit consists of a covered building and uncovered areas, all of which are enclosed by a fence.

Date of Start-Up: The outdoor and indoor storage facilities were been in use from 1980 to 1993 to provide temporary storage for hazardous waste generated at NAB Little Creek. The outdoor facility was used as "overflow" storage for the indoor facility.

Date of Closure: This unit was "clean closed" in accordance with the approved closure plan and Virginia Hazardous Waste Management Regulations. The official letter of April 29, 1997 from DEQ granting closure of this unit is attached in Appendix C.

Wastes Managed: The capacity of indoor storage on the concrete pad is about 5,000 gallons, with unlined outdoor storage used as necessary for up to 3,000 additional gallons. Wastes accepted by this facility between 1981-1984 are described in the table below.

Release Controls: Drums of hazardous waste are stored on a concrete surface in the indoor facility. The concrete integrity appeared to be in good condition. The outdoor facility has an unbermed asphalt lot surrounded by a chain-link privacy fence.

History of Releases: There has been reported surface accumulations of oily, tarry, or otherwise discolored soils indicating that there have been several spills of waste in the outdoor storage area. According to base personnel, soil samples surrounding the outdoor storage facility have been tested for oil and grease. According to the Navy's comments on the Draft RFA, the top twelve inches of soil were removed from the area and replaced with clean fill. *References*: 1, 2, 11

Hazardous Materials Handled for Off-Base Disposal by PWC, 1981-1984

Source	Material	Volume
Ships	Paint thinner	1,800 + gal
	Mercuric nitrate	1,250 gal
	Batteries	110 +
	Oils/greases	1,250 + gal
	DBA canisters	200 +
	Fluorescent tubes	3,000 +
	Gasoline	500 gal
	Mercury	3 - 4 gal
	Sulfuric acid	40 gal
	Boiler chemicals	200 + gal
	PKP	700 lb
	PCE, other halocarbons	120 + gal
	Sodium nitrate	155 lb
	Miscellaneous	150 lb
SIMA	Solvents	2,000 gal
	Zepton exceed/oil	500 gal
	Batteries	75 +
	Sulfuric acid	230 gal
	Paint/thinner	100 + gal
	Mercury	4 –5 gal
	Miscellaneous	350 gal
ACU2	Paint	900 + gal
	Batteries	190 +
	Solvent	175 gal
	Miscellaneous	25 gal
Naval Construction Battalion 2	Paint	800 + gal
	Oil	1, 000 + gal
	Solvents	1,300 + gal
	Batteries	108
Amphibious School	Ethylene oxide	100 gal
	Mercuric nitrate	275 gal
	Solvents	38 gal
Boiler School	Mercuric nitrate	495 gal
	Batteries	76

Actions Taken: According to the Navy's comments on the Revised RFA, the oil stained soil was removed. The area was also "clean closed" in 1997, see Appendix C.

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine if releases have occurred. An appropriate grid system should be constructed in the grassy areas immediately adjacent to the outdoor pad. Soil samples should be analyzed for SVOCs, Metals, and soil pH. The Draft Permit states that the VI Work Plan shall contain documentation that the soil has been removed and disposed of properly. Although no specific records are available concerning the previous disposal of petroleum contaminated soils it was routine practice to sample the soil and dispose of it according to the sample results. Photos were taken on October 4, 1993 to compare to the VSI photos. There were no stained soils around this SWMU.

Recommendations: On March 9, 1999, EPA and DEQ agreed that no further action was required for this SWMU (Partnering Team Meeting Minutes, March 1999 and May 1999).

SWMU 78 Navy Exchange Vending Office Drum Area – Building 3319

Description: Building 3319 presently houses the navy exchange vending office. From 1944 to 1954 the Public Works Department used the building for vehicle maintenance. A service bay in the building is still used for vehicle maintenance. The drum area consisted of two rusted drums on a wooden skid. Both drums were full. The drums are not labeled and their contents are unknown.

Date of Start-Up: The building became the navy exchange vending office in 1954. It is not known how long the drum area has been in use.

Date of Closure: Drums are no longer stored in this area.

Wastes Managed: The drum storage area contains two drums that apparently hold an oily-like substance.

Release Controls: The two drums are resting on a dilapidated wooden skid that lies partially on grass and partially on asphalt.

History of Releases: During the VSI, oily stains were observed below the drum area.
References: 1, 2

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine if a release of hazardous constituents has occurred. An appropriate grid system should be constructed to include the visibly stained areas plus an area of several feet around the stained zone. A surface and at least one shallow subsurface soil sample should be collected from each grid and analyzed for VOCs, SVOCs, and oil and grease. The Draft Permit states that soil samples should be taken and analyzed for Volatiles and Semi-Volatiles.

The Revised RFA does not fully describe where the drums were located. The photo taken during the VSI was a "close-up" of the drums. There are no background references in the photo to

determine where the drums were located. On September 20, 1993 the site was visited and no drums were present around the perimeter of the building. Since the exact location of the drums can not be discerned, we would be unable to sample the proper location.

A Site Characterization has been performed near SWMU as part of the UST program (see SWMU 34). No contamination was detected and the site was closed.

Recommendations: On March 10, 1999, EPA, DEQ, and the Navy visited this SWMU. The former location of the drums could not be determined. No staining was found either. EPA and DEQ agreed no further action was required for this SWMU (Partnering Team Meeting Minutes, March 1999 and May 1999).

SWMU 81 MWR Auto Hobby Shop Stain in Parking Lot Area – Building 3530

Description: The auto hobby shop is presently located in Building 3530, between 5th and 3rd Streets. Prior to this shop the building was used for heavy duty equipment maintenance. The shop is accessible to base personnel to work on their motor vehicles. Oil changes, lubrication work, body work, and painting are common activities. Large oily stains were located next to the parking lot at several locations. These stains likely emanate from oily liquids from dumpsters, out of use vehicles, and equipment stored around the site.

Date of Start-Up: In 1954, the heavy duty maintenance shop was constructed. The building became the auto hobby shop in 1974 when the transportation department relocated to its new building.

Date of Closure: There are no plans for closure of these units.

Wastes Managed: Oily liquids from dumpsters, inactive vehicles, and equipment are present around the site.

Release Controls: No release controls were observed for SWMU 81.

History of Releases: Oily stains and stressed vegetation were observed at several locations on the parking lot edge during the VSI. *References*: 1,2

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine if a release of hazardous constituents has occurred. An appropriate grid system should be constructed to include the visibly stained areas plus an area of several feet around the stained zone. A surface and at least one shallow subsurface soil sample should be collected from each grid and analyzed for VOCs, SVOCs, and oil and grease. The Draft Permit states that soil samples should be taken and analyzed for Volatiles and Semi-Volatiles.

Photos were taken on October 4, 1993 to compare to the VSI photo. There was no evidence of large stains in this area.

Oily liquids are no longer deposited into the dumpsters. Oil filters are properly drained and recycled. All oily parts are washed in a solvent tank and the solvent is under a contract to be pumped out and refilled on a periodic basis.

A Site Characterization has been performed near this site as part of the UST program (see SWMU 36). No soil or groundwater contamination was detected at the site with the exception of the area immediately surrounding the former UST. The lack of contamination detected during the site characterization implies that the oil stains observed during the VSI do not appear to have impacted the soil or groundwater at this site.

Recommendations: On March 10, 1999, EPA, DEQ, and the Navy visited this SWMU. The oil stains and stressed vegetation reported around the edges of the parking lot could not be located. No sampling will be conducted in these areas. The location of the dumpsters and stains in the picture from the VSI was located. Most of the area is asphalt, however, some soil around the fire hydrant is present. Two soil samples will be collected from 0-6", composited, and analyzed for SVOCs and Metals. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000; sampling discussed May 1999).

SWMU 96 CB301 Seabee Vehicle Maintenance Facility Scrap Storage Area

Description: The Seabees operate two vehicle maintenance shops in Building CB301; a "light shop" and a "heavy shop." The light shop is used for automotive maintenance. The heavy shop is used for construction equipment maintenance. This unit is located in back of Building CB301. Scrap metal is stored here. The yard is visibly stained with oil.

Date of Start-Up: The SWMUs in this area went into operation after 1984.

Date of Closure: There are no plans for closure of these units.

Wastes Managed: Wastes managed at the Seabee Vehicle Maintenance Facility Scrap Storage Area include scrap metal

Release Controls: No release controls were identified for the Seabee Vehicle Maintenance Facility Scrap Yard.

History of Releases: The scrap yard was stained with oil indicating a release to the soil had occurred. *References*: 1, 2

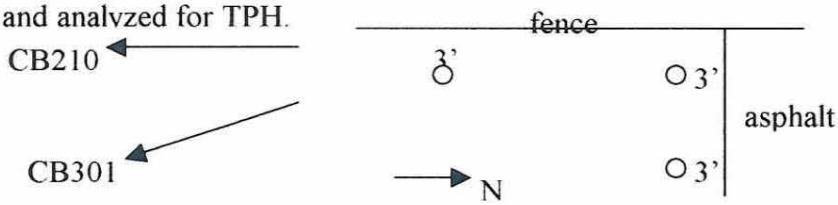
Actions Taken: According to the Navy's comments on the Draft RFA, the oil stained soil has been removed.

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine if a release of hazardous constituents has occurred. An appropriate grid

system should be constructed to include the visibly stained areas plus an area of several feet around the stained zone. A surface and at least one shallow subsurface soil sample should be collected from each grid and analyzed for VOCs, SVOCs, and oil and grease. The Draft Permit states that soil samples should be taken and analyzed for Volatiles and Semi-Volatiles. The Draft Permit also states that the VI Work Plan shall contain documentation that the soil has been removed and disposed of properly. Although no specific records are available concerning the previous disposal of petroleum contaminated soils it was routine practice to sample the soil and dispose of it according to the sample results.

Photos were taken on October 5, 1993 to compare to the VSI photo. The Seabee compounds have drastically changed over the last ten years due to demolition and construction activities. The photo taken on October 5, 1993 is the best guess of where this SWMU previously existed. This area was not visibly stained with oil

Recommendations: On March 10, 1999, EPA, DEQ, and the Navy visited this SWMU. The former location was hard to determine because the Navy's original photo from the Revised RFA had been lost. EPA will attempt to locate the photo in order to determine the location of the SWMU.
On May 11, 1999, EPA, DEQ, and the Navy revisited the site with the RFA photo in hand. The location of the SWMU was determined to be on the east side of the southeast corner of the fence, north of CB210 and CB301. Three soil samples will be collected from 6-12", as shown below, composited to one sample and analyzed for TPH.



In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000).

SWMU 98 CB210 Elevated Causeways Mechanic Shop Material Dispensing Area

Description: This unit is located near Building CB210, a supply building. One above-ground waste oil tank (SWMU 62) is associated with the ELCS. The ELCS material dispensing area (SWMU 98) consists of three 55-gallon drums of lubricants on wooden pallets over gravel.

Date of Start-Up: Start-up information for this unit is not available at this time.

Date of Closure: This unit no longer exists.

Wastes Managed: Waste oil lubricants are managed in this unit.

Release Controls: As the drums are opened, they are fitted with a dispensing pump which helps prevent spills.

History of Releases: The gravel area beneath the drums was stained during the VSI. It appeared to have occurred from routine dripage. *References*: 2

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine the extent of contamination. An appropriae grid syd system be constructed in and several feet around the stained areas. The samples should be analyzed for EP Tox Lead, VOCs, and Semi-Volatiles. The Draft Permit states that soil samples should be taken and analyzed for EP Tox, Lead, VOCs, and Semi-Volatiles.

The Seabee compounds have drastically changed over the last ten years due to demolition and construction activities. This SWMU no longer exists. Since the shop no longer exists it would be difficult to determine the past location of the drums.

On March 9, 1999, EPA, DEQ, and the Navy discussed this SWMU. The description is contradictory. It was not clear whether waste oil was stored or virgin oil was dispensed. The drums in the picture from the VSI looked new and seemed to have product labels on them vice waste labels. It was decided that this was a material dispensing area instead of a waste storage area.

Recommendations: On March 10, 1999, EPA, DEQ, and the Navy visited this SWMU. The best estimate of the former location of the site was determined. Three grab samples will be collected from 12-18", composited, and analyzed for TPH. TPH will most likely be elevated regardless of whether spills were from virgin oil or waste oil. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000; sampling discussed May 1999).

SWMU 101 Beachmaster Unit 2 Satellite Accumulation Area – Building 3804

Description: The BMU2 satellite accumulation area is located outside Building 3804. This unit consists of a 55-gallon drum on a wooden pallet over a concrete slab. It is used to collect flammable wastes.

Date of Start-Up: Start-up information for this SWMU is not available at this time.

Date of Closure: The satellite accumulation area ceased operation in 199X?

Wastes Managed: Flammable wastes are managed in this unit.

Release Controls: Wastes are accumulated in a drum which rests on a concrete slab.

History of Releases: The grassy area around the unit was observed to be stained during the VSI. *References*: 2

Actions Taken: According to the Navy's comments on the Draft RFA, the stained soil in this area has been removed.

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine if a release of hazardous constituents has occurred. An appropriate grid system should be constructed to include the visibly stained areas plus an area of several feet around the stained zone. A surface and at least one shallow subsurface soil sample should be collected from each grid and analyzed for VOCs, SVOCs, and oil and grease. The Draft Permit states that soil samples should be taken and analyzed for Volatiles and Semi-Volatiles. The Draft Permit also states that the VI Work Plan shall contain documentation that the soil has been removed and disposed of properly. Although no specific records are available concerning the previous disposal of petroleum contaminated soils it was routine practice to sample the soil and dispose of it according to the sample results.

There were no photographs taken of this SWMU during the VSI. The Revised RFA description of the site does not specify exactly where the drum was located. Building 3804 has been demolished since the VSI. The BMU-2 compound has also drastically changed. A new building has been constructed.

The area was visited on May 6, 1999. The former location of Bldg 3804 is now an asphalt parking lot. The old foundation is no longer present. Digital pictures are available.

Recommendations: On April 19, 1999, the former location of 3804 was identified on a map. Due to the potentially small area affected by one drum, the Navy's report that the oil stained soil had been removed, and the likelihood that regrading has masked any remaining contamination, no further action was anticipated.
On May 11, 1999, EPA, DEQ, and the Navy visited this SWMU. The exact location of the drums could not be determined. EPA and DEQ agreed no further action was required (Partnering Team Meeting Minutes May 1999).

SWMU 112 Pier 10 Sandblasting Area Satellite Accumulation Area

Description: The Pier 10 sandblasting yard satellite accumulation area is located in SWMU 111, the Pier 10 sandblasting yard. The satellite accumulation area (SWMU 112) was a metal locker used to accumulate small containers of painting wastes. The locker sits on the ground. A dispensing area is also present and consists of three above ground tanks (SWMU 31) on a concrete slab surrounded by a six inch concrete berm with a drain valve. This unit is described in Section 4.

Date of Start-Up: Start-up information for these units is not available at the present time.

Date of Closure: This unit was moved to inside building 1263.

Wastes Managed: Painting wastes are managed in SWMU 112, the Pier 10 satellite accumulation area.

Release Controls: The metal locker at the Pier 10 satellite accumulation area has a metal lip approximately 3 inches in height.

History of Releases: No releases were observed from this unit during the VSI. *References*: 1, 2

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine the extent of contamination. An appropriate grid system be constructed in and several feet around the stained areas. The samples should be analyzed for EP Tox Lead, VOCs, and Semi-Volatiles. The Draft Permit states that soil samples should be taken and analyzed for EP Tox, Lead, VOCs, and Semi-Volatiles.
The Draft Permit incorrectly calls this SWMU 113. It should be referred to as SWMU 112.
New photos were taken to compare to the VSI photo.

Recommendations: On March 10, 1999, EPA, DEQ, and the Navy visited this SWMU. The best estimate of its former location was determined to be under the middle of a parking lot. Black soil can be seen in the photo from 1988, however, it was not clear whether it was black beauty or staining. Because the SWMU was described as the metal locker, and no releases were reported, it was assumed that the black material was not from the SWMU. The area around the former SWMU has changed drastically due to the construction of a new sandblast area and extensive regrading for the parking lot. Any contamination remaining in the soil will be masked due to the changes. Also, since it is covered, it poses no likely risk to health. EPA and DEQ agreed no further action is required for this SWMU (Partnering Team Meeting Minutes March 1999 and May 1999).

SWMU 116 MWR Recreation Boat Maintenance Facility – Building 3021

Description: The MWR Boat Maintenance Facility is located in Building 3021. The facility is currently used to store recreational boats. In the past, gasoline was poured along the fence in back of Building 3021 for weed control.

Date of Start-Up: Operation of the MWR Boat Maintenance Facility began in 1943.

Date of Closure: There are no plans to close the MWR Boat Maintenance Facility.

Wastes Managed: In the past, gasoline was poured along the fence in back of Building 3021.

Release Controls: No release controls for this unit were identified.

History of Releases: In the past, gasoline was released to the soil along the fence in back of Building 3021. Facility personnel estimate approximately 5 gallons of gasoline per year were used from approximately 1969-1979. *References*: 1, 2

Actions Taken: From October 25-31, 1995 this site was sampled for Relative Risk Ranking using

DOD's model. Three surface soil and one groundwater sample were collected and analyzed for VOCs and TAL Metals. See the figure for SWMU and sampling locations. The following table lists the compounds detected.

1995 Relative Risk Ranking Sampling Results				
SWMU 116	LC08-S1	LC08-S2	LC08-S3	LC08-W1
VOLATILES (µg/kg, µg/L)				
Chloroform	5 J	5 J	ND	ND
Toluene	ND	ND	3 J	1 J
Styrene	ND	ND	5 J	ND
METALS (mg/kg, µg/L)				
Aluminum	4820	7540	11200	14400
Antimony	1 BN	1.5 BN	2 BN	5.9 B
Arsenic	3.5	4.9 N	3.6 N	9 B
Barium	34.8 B	52 N	113 N	106 B
Beryllium	0.31 B	0.52 BN	0.93 BN	1.5 B
Calcium	427	641	190 B	18700
Chromium	7.6	9.8 N	11.5 N	19.6
Cobalt	3 B	3.3 BN	4 BN	7 B
Copper	19.2	11.1	8.1	42.4
Iron	5840	8680	12800	17600
Lead	8.2	19.5	15.6	26.5
Magnesium	538	827	1200	5420
Manganese	169	287	236	525
Mercury	0.12 N	0.26 N	ND	ND
Nickel	5.9 B	6.4 BN	8.8 BN	16.5 B
Potassium	168 B	235	289	1580 E
Selenium	0.91 B	1.3 N	1.5 N	3.2 B
Sodium	49 B	77.8 B	77.4 B	15600 E
Vanadium	8.4 B	12.1 N	16.2 N	27.2 B
Zinc	27.5	28.1	38.1	192

Comments: The Revised RFA suggested that shallow subsurface soil sampling be conducted to determine the extent of contamination. Soil samples should be collected at regular intervals along the fence line where gasoline was reportedly poured. The soil samples should be analyzed for SVOCs. The Draft Permit states that soil samples should be taken and analyzed for Semi-Volatiles. No photos were taken during the VSI. Both the Revised RFA and the Draft Permit incorrectly identified SWMU 115 as SWMU 116. Hence, there were two recommendations for SWMU 116. Only the recommendations for the Boat Facility are reported here.

Recommendations: Soil samples from 12-18" were collected along the fence line in 1995 and analyzed for VOCs and Metals. Because the suspected release occurred from 1969-1979 when leaded gasoline was still used, lead should be elevated if the release actually occurred. Since lead was not found to be significant, and no significant volatiles were found, recommend no further action for this SWMU. EPA will resolve whether analysis for SVOCs is required. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA

(Partnering Team Meeting Minutes March 2000).

SWMU 119 Former Special Warfare Group 2 Electronics Shop – Building W112

Description: The former SWG2 electronics shop is located in Building W112. The SWG2 electronics shop no longer occupies this facility. File information indicates that, in the past, the building was served by a septic system which received waste solvents and dilute phosphoric acid generated by the shop. The current status of the septic system is not available.

Date of Start-Up: The SWG2 electronics shop began operations in Building W112 in 1943.

Date of Closure: The SWG2 electronics shop vacated Building W112 after 1984. The Building was demolished in 1998.

Wastes Managed: File information indicates a septic system associated with Building W112 received waste solvents and dilute phosphoric acid.

Release Controls: No release controls for this facility were identified.

History of Releases: File information indicates waste solvents and dilute phosphoric acid may have been released to a tile field associated with Building W112. *References*: 1, 2

Actions Taken: From October 25-31, 1995 this site was sampled for Relative Risk Ranking using DOD's model. Two subsurface soil and one groundwater sample were collected and analyzed for VOCs, SVOCs, and TAL Metals. See the figure for SWMU and sampling locations. The following table lists the compounds detected.

1995 Relative Risk Ranking Sampling Results

SWMU 119	LC10-D1	LC10-D2	LC10-W1
VOLATILES (µg/kg, µg/L)			
Chloroform	4 JB	5 J	ND
SEMIVOLATILES (µg/kg, µg/L)			
1,4-Dichlorobenzene	ND	ND	0.7 J
Acenaphthene	ND	ND	3 J
Dibenzofuran	ND	ND	0.4 J
Diethylphthalate	ND	ND	1 J
Fluoranthene	ND	7 J	ND
Pyrene	ND	8 J	ND
Benzo(a)anthracene	ND	7 J	ND
Chrysene	ND	11 J	ND
Benzo(b)fluoranthene	ND	9 J	ND
Benzo(k)fluoranthene	ND	8 J	ND
METALS (mg/kg, µg/L)			
Aluminum	1960	1800	1320

Antimony	1 BN	0.66 BN	6.1 B
Arsenic	ND	2.2	ND
Barium	9 B	13.4 B	50.4 B
Beryllium	ND	0.22 B	ND
Calcium	991	844	122000
Chromium	5.6	16.3	5 B
Cobalt	0.88 B	2.5 B	ND
Copper	2.2 B	11.7	4 B
Iron	2920	21100	2940
Lead	4.2	40.8	9.9
Magnesium	305	721	3440
Manganese	24.6	152	217
Nickel	8.4 B	168	352
Potassium	351	652	6020 E
Selenium	0.57 B	2.6	2.8 B
Sodium	42.2 B	49.8 B	15700 E
Vanadium	2.4 B	11.2	3.9 B
Zinc	20	85.1	56.7
VOA#	7 7 7 7 7 7 7 7 7 7 7 7 7	7 7 7 7 7 7 7 7 7 7 7 7 7	7 7 7 7 7 7 7 7 7 7 7 7 7

Comments: The Revised RFA suggested that shallow subsurface samples should be collected at a depth immediately below the tile field to determine the extent of contamination. An appropriate grid system around the tile field should be constructed and one sample per grid should be analyzed for pH, VOCs, and SVOCs. The Draft Permit states that soil samples should be taken and analyzed for pH, Volatiles, and Semi-Volatiles.

Several PWC personnel were consulted about this site. The building was never hooked up to the sanitary sewer system. A sink was present inside the building. The pipes exited the building on the southeast corner. Placement of the samples collected in 1995 was due to the location the pipes entered the ground from the building, and assuming a tile field extended to the south. The building itself was demolished in 1998. During the demo, no evidence of a tile field or septic tank was found. It is possible that the pipes from the sink emptied directly into the ground below the building, or emptied into a dry well.

Although UST wells are present upgradient of the site, groundwater gradient could not be determined because the water levels from the wells were inconclusive, possibly due to influences from the sanitary sewer system.

Recommendations: EPA, DEQ, and the Navy visited this SWMU on May 11, 1999. Three groundwater samples will be collected from approximately 14-17' bgs and analyzed for VOCs. The samples will be collected in a triangle at the location of the old drain pipe. Collection of soil samples is not recommended for screening purposes. Only if groundwater contamination is detected should soil samples be collected, since it is not known whether the tile field actually existed. For screening purposes, analysis for only VOCs should determine whether a release has occurred. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000).

SWMU 120 VC-6 Satellite Accumulation Area – Building 2074

Description: This unit is adjacent to Building 2074 and consists of wastes stored in three 55-gallon drums and three small containers on wooden pallets over gravel. Wastes collected at this unit include waste fuel, waste oil, and painting wastes.

Date of Start-Up: Start-up information for this unit is not available at this time.

Date of Closure: VC-6 vacated Building 2074 in 1995. The Building was demolished in 1997.

Wastes Managed: SWMU 120 was used to store waste fuel, waste oil, and painting wastes.

Release Controls: Some of the wastes are stored in a locked, metal cabinet that is resting on a concrete slab. No release controls for the 55-gallon drums were identified.

History of Releases: Stains on the soil near SWMU 120 were observed during the VSI.
References: 2

Actions Taken: From October 25-31, 1995 this site was sampled for Relative Risk Ranking using DOD's model. Three surface soil samples were collected and analyzed for VOCs, SVOCs, and TAL Metals. See the figure for SWMU and sampling locations. The following table lists the compounds detected.

1995 Relative Risk Ranking Sampling Results			
SWMU 120	LC11-S1	LC11-S2	LC11-S3
VOLATILES (µg/kg)			
Methylene Chloride	3.0 J	ND	ND
Acetone	53.0	55.0	ND
SEMIVOLATILES (µg/kg)			
Fluoranthene	23 J	ND	ND
METALS (mg/kg, µg/L)			
Aluminum	10500	10400	13900
Antimony	1.4 B	0.85 B	ND
Arsenic	1.3 B	1.8 B	1.5 B
Barium	41.6 B	39.5 B	51.2
Beryllium	0.26 B	0.35 B	0.35 B
Calcium	758	1600	798
Chromium	11.5	12	15.3
Cobalt	1.5 B	2.1 B	1.6 B
Copper	4.8 B	5.4 B	6.2
Iron	4010	13700	4110
Lead	16.7	9.5	9.6
Magnesium	628	790	752
Manganese	34.7	320	33.4

Nickel	5.2 B	5.5 B	5.9 B
Potassium	335	364	329
Selenium	0.54 B	1.3	0.74 B
Sodium	91.2 B	100 B	73.4 B
Vanadium	10.7 B	15.9	13
Zinc	19	16.9	11.8

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine the extent of contamination. An appropriate grid system should be constructed with soil samples analyzed for metals, volatiles, and semi-volatiles. The Draft Permit states that soil samples should be taken and analyzed for Metals, Volatiles, and Semi-Volatiles. The photo taken during the VSI does not provide a good perspective to relocate the site. On October 4, 1993 the site was visited and there was no evidence of stains or releases.

Recommendations: On April 19, 1999, EPA and DEQ agreed that no further action was required for this SWMU (Partnering Team Meeting Minutes April 1999 and May 1999).

SWMU 122 Gymnasium Emergency Generator – Building 3147

Description: This unit is an emergency generator located adjacent to the front entrance to Building 3147, the gymnasium. The generator sits on a concrete slab at grade. The pad was visibly stained with oil. In addition, during the VSI, a milky white substance was observed leaking from the generator, off the concrete pad and onto the adjoining soil and grass. White stains on the pad indicate that the release has been ongoing.

Date of Start-Up: No start-up information for this unit is available at this time.

Date of Closure: According to the Navy's comments on the Draft RFA, the generator was removed October 1988.

Wastes Managed: Oil and a milky white substance leaked from the generator.

Release Controls: The unit sits on concrete pavement with no berms and no drain.

History of Releases: During the VSI, oils and a milky white substance were observed leaking from the generator to soil. *References*: 2

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine if a release of hazardous constituents has occurred. An appropriate grid system should be constructed to include the visibly stained areas plus an area of several feet around the stained zone. A surface and at least one shallow subsurface soil sample should be collected from each grid and analyzed for VOCs, SVOCs, and oil and grease. The Draft Permit states that soil samples should be taken and analyzed for Volatiles and Semi-Volatiles. Both the Revised RFA and the Draft Permit incorrectly identified SWMU 122 as SWMU 121. Hence, there were two recommendations for SWMU 121. Only the recommendations for the Emergency

Generator are reported here.

The gymnasium was visited on October 4, 1993. The generator did not exist and there was no evidence of a release from a former generator.

According to PWC personnel, the milky white substance leaking from the generator was most likely acid from the batteries inside the generator. Currently, the emergency generator for this building is stored in a paved compound near Building 3165. Only when it is needed, it is hooked up to the connections for the building.

Site was visited again on May 6, 1999. The former location of the generator was identified. Digital pictures are available. No staining or evidence of release was present.

Recommendations: EPA, DEQ, and the Navy visited this SWMU on May 11, 1999. One soil sample, collected from 0-6" in the southeast corner of the area where the concrete and asphalt meet, will be analyzed for TPH. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000; sampling discussed May 1999).

SWMU 127 Amphibious Base Landfill Transfer Station

Description: This unit is located south of the intersection of Amphibious Drive and Murray Rd, to the west of the Amphibious Base Landfill (SWMU 123). See the figure for location of this site. The Solid Waste Transfer Station (SWMU 127) is used to transfer municipal refuse from a central collection area to trucks for off-site disposal.

Date of Start-Up: The Solid Waste Transfer Station (SWMU 127) is assumed to have begun operation in 1979 when the Amphibious Base Landfill (SWMU 123) was closed.

Date of Closure: DEQ granted closure of this site on March 20, 1995 according to the approved closure plan, inspection and applicable regulations. See Appendix C for the March 20 closure letter and a letter from Feb 2 terminating the enforcement order.

Wastes Managed: The transfer station accepted municipal refuse.

Release Controls: No release controls were identified for this unit.

History of Releases: No releases were identified from this unit. *References*: 3, 4

Comments: The Revised RFA stated that the facility is currently conducting a soil and groundwater remedial investigation as part of the IR Program. No additional action is suggested beyond the scope of this study at the present time. The Draft Permit states that this SWMU, which is included in the IR Program, shall also be included in the VI along with the sampling and analysis that were used and the results.

Recommendations: On April 19, 1999, EPA and DEQ agreed no further action was required for this SWMU (Partnering Team Meeting Minutes April 1999 and May 1999).

SWMU 129 Port Ops Satellite Accumulation Area – Building 3896

Description: Port Ops, Building 3896, houses the engine overhaul shop for a boat maintenance area. Boat bilges are emptied of residual bilge water, hulls are ground by hand and painted, and engine maintenance is performed in this area. The Satellite Accumulation Area collects paint wastes in drums at this unit.

Date of Start-Up: Start-up information for this SWMU is not available at this time.

Date of Closure: There are no plans to close this SWMU.

Wastes Managed: Flammable painting wastes are collected at the satellite accumulation area for paint wastes (SWMU 129).

Release Controls: Paint wastes from SWMU 129 rest on a concrete slab of good integrity.

History of Releases: Stains on the concrete from the satellite accumulation area for paint wastes SWMU 129 were identified. *References*: 2

Actions Taken: During the RRR Sampling event in 1995, this SWMU was investigated. The Work Plan included two samples to be collected from the sludge in the bottom of the storm drain near the unit. However, upon investigation of the drain, no sludge was present. Therefore, no samples could be collected. This SWMU is also regulated under the VPDES Program/Permit. See the figure for SMWU location.

Comments: The Revised RFA suggested that sampling be conducted near the drain for sludge that has accumulated from surface runoff. An appropriate grid system should be constructed, with one sample collected per grid. The samples should be analyzed for lead, semi-volatiles, and pH. In addition, consideration should be given to provide containment of the satellite accumulation area so that releases will not directly enter the storm water drain. The Draft Permit states that sludge sampling should be conducted in the area near the drain. Samples should be analyzed for lead, semi-volatiles, and pH. A plan should be developed for containment of the satellite accumulation area so that releases will not directly enter the storm water drain.

The storm water drain is regulated under the VPDES Program. Appropriate Best Management Practices have been taken to preclude wastes from entering the storm drain. Additionally, the paint stains observed during the VSI were on concrete. There is no evidence that paint wastes have reached the storm drain.

Recommendations: On March 10, 1999, EPA, DEQ, and the Navy visited this SWMU. The compound was in good condition, and there was no evidence that releases could have occurred to

any soil in the area. EPA and DEQ agreed that no further action was required for the soil or groundwater near the site. However, due to reported releases to the storm drain, sediment samples directly under the outfall may be required. A total of 6 samples should be collected from 3 locations at two depths, from 0-4" and 12-18", and analyzed for Metals and SVOCs. The three locations should be in the form of a triangle, with one apex directly under the outfall. If rip rap is encountered, the samples should be moved away from the outfall, but not beyond the overhang of the pier. The BTAG may visit the site on August 10, 1999. The recommendation may change slightly as a result of the visit. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000; sampling discussed May 1999).

New SWMU 6 (SWMUs 131-133/6) Seabee Area – CB124

Description: This area is used for equipment maintenance and storage of excess material awaiting turn-in to the Defense Reutilization and Marketing Office (DRMO). Maintenance activities include painting and degreasing. There are three SWMUs in the area including:

- SWMU 131 - Satellite Accumulation Area for Paint Wastes
- SWMU 132 - Inoperative Wire Degreaser
- SWMU 133 - Excess Material Storage Area

The satellite accumulation area for paint wastes (SWMU 131) consists of a 55-gallon steel drum and varying numbers and sizes of smaller metal cans on a wooden pallet which stands on soil. The inoperative wire degreaser (SWMU 132) is an elevated metal trough approximately 20 feet long and 12 inches deep. This unit formerly contained jet propellant 5 (JP-5) used to degrease wires. The excess material storage area (SWMU 133) is a gravel yard used to store excess paint and cables.

Date of Start-Up: Start-up information for these SWMUs is not available at this time.

Date of Closure: No closure dates have been established for these three SWMUs. However, the inoperative wire degreaser had been taken out of service by the time of the VSI, but the trough was still on-site awaiting disposal.

Wastes Managed: The satellite accumulation area for paint wastes (SWMU 131), is used to manage waste paints and thinners. The inoperative wire degreaser (SWMU 132) formerly managed jet propellant 5 (JP-5). The excess material storage (SWMU 133) was used to store excess paints.

Release Controls: No release controls were identified for SWMUs 131 and 132. Paints in SWMU 133 are elevated on wooden pallets and covered with canvas tarps to protect them from corrosion.

History of Releases: Paint wastes have been spilled on the soils at SWMU 131. JP-5 appears to

have leaked from a valve on SWMU 132 staining the soil under this unit. Stains were observed at several locations at SWMU 133. *References*: 2

Actions Taken: According to the Navy's comments on the Draft RFA, the paint stained soil has been excavated and removed. Although this was reported for SWMU 132, this may have been a mistake, since the paint stains were reported for SWMU 131.
From October 25-31, 1995 this site was sampled for Relative Risk Ranking using DOD's model. Six surface soil and four groundwater samples were collected and analyzed for VOCs, SVOCs, and TAL Metals. See the figure for SWMU and sampling locations. These SWMUs were renumbered to SWMU 6. The following table lists the compounds detected. As a result of the sampling, the site was ranked with a medium relative risk. However, due to the simplistic "screening" method of DOD Relative Risk Ranking model, almost any contamination with the potential for exposure and transport will trigger a medium risk, regardless of the concentration of contamination.

1995 Relative Risk Ranking Sampling Results

SWMUs 131-133 SS	LC14-S1	LC14-S2	LC14-S3	LC14-S4	LC14-S5	LC14-S6
VOCs (µg/kg)						
Acetone	8.0 J	17.0	26.0	11.0	15.0	29.0
Chloroform	5.0 J	ND	ND	ND	3.0 J	5.0 JB
SVOCs (µg/kg)						
Pyrene	6 J	ND	ND	ND	ND	ND
METALS (mg/kg)						
Aluminum	10900	6920	12700	6050	8080	10300
Antimony	1.2 B	1.2 B	0.72 B	1.5 B	0.84 B	0.69 B
Arsenic	2.8	2.4	2.7	2 B	1.3 B	2.4
Barium	29.2 B	37.9 B	38.8 B	29.5 B	23.2 B	29.9 B
Beryllium	0.3 B	0.42 B	0.49 B	0.46 B	0.31 B	0.3 B
Calcium	500	391	633	593	656	542
Chromium	13.8	8.9	17.3	12.8	13.2	12.1
Cobalt	2 B	2.5 B	4.5 B	2.5 B	2.3 B	2 B
Copper	5.2 B	2.8 B	5.8 B	17.5	5 B	4 B
Iron	9250	7900	11600	11400	6170	8670
Lead	17.5	9.4	15.1	34.6	8.4	6.8
Magnesium	788	700	1130	642	1010	814
Manganese	32	41.5	57	80.7	51.6	53
Nickel	5.9 B	5.8 B	10.1	9.9	6.9 B	5.9 B
Potassium	408	216 B	588	309	450	462
Selenium	1.2 B	1 B	1.3	1.5	0.7 B	0.93 B
Sodium	85 B	94.7 B	136 B	86 B	68.6 B	72.6 B
Vanadium	16.8	12.6	19.3	10.2 B	11.5	14.1
Zinc	34	17.3	66.4	92.4	45.7	17.4

1995 Relative Risk Ranking Sampling Results

SWMUs 131-133 – GW	LC14-W1	LC14-W2	LC14-W3	LC14-W4

VOCs (µg/L)				
1,2-Dichloroethene	ND	ND	3 J	ND
SVOCs (µg/L)				
Diethylphthalate	0.5 J	0.8 J	0.4 J	0.5 J
Di-n-butylphthalate	ND	0.7 J	ND	ND
METALS (µg/L)				
Aluminum	74000	15300	796	31100
Antimony	7.6 B	5.9 B	3.2 B	ND
Arsenic	23.6	44.6	71.4	52.4
Barium	374	57.2 B	14.3 B	99.4 B
Beryllium	3.9 B	1.4 B	ND	1.6 B
Calcium	43000	6440	6300	16700
Chromium	113	24.1	3 B	46.3
Cobalt	23 B	4.7 B	1.8 B	11.2 B
Copper	115	10.6 B	ND	27.9
Iron	93800	79900	126000	123000
Lead	164	18.2	6.3	21
Magnesium	14300	9510	7800	15800
Manganese	1790	297	329	772
Mercury	1.2 B	ND	ND	ND
Nickel	49.8	10.7 B	3.3 B	21.6 B
Potassium	10600 E	2150 E	766 BE	4010 E
Selenium	7.6	7.1	11.1	11.2
Silver	ND	ND	ND	54.2 N
Sodium	16800 E	33100 E	27900 E	28500 E
Vanadium	123	37 B	5.8 B	58.6
Zinc	912	46.3	39.8	58.5

The results reported above were compared to the EPA Region III RBC Table of 4/12/99. The RBC for non-carcinogenic chemicals was divided by 10 to compensate for exposure to multiple chemicals. If the chemical concentration detected at the site was greater than the value in the "Compare" column, an exceedance was noted, and shaded grey. The attached spreadsheet shows exceedances of several metals only in groundwater.

Comments: The Revised RFA suggested that soil sampling be conducted to determine the extent of contamination. An appropriate grid system should be constructed with one soil sample collected per grid. The soil samples should be analyzed for Metals and Semi-Volatiles. The Draft Permit states that soil samples near SWMUs 131 and 133 should be taken and analyzed for Metals and Semi-Volatiles. The Draft Permit also states that the VI Work Plan shall contain documentation that the soil (most likely at SWMU 131) has been removed and disposed of properly. Although no specific records are available concerning the previous disposal of contaminated soils, it was routine practice to sample the soil and dispose of it according to the sample results.

Recommendations: EPA, DEQ, and the Navy discussed this site on April 19 and May 10, 1999. Based on comparison of the chemical concentrations found in the soil to Industrial RBCs, EPA

and DEQ agreed that no action is required for the soil. However, due to elevated metals in groundwater that may be site realted, recommend the collection of three *filtered* groundwater samples near the previous locations of W1, S2, and W4 using a geoprobe or other direct push method. The samples will be analyzed for Metals. Results may be compared to background if available. In January 2000 the Navy, EPA, and DEQ addressed this SWMU for work to be performed and referenced as a Site Screening Area in Section X and Appendix A of the FFA.

SWMU 135 Hydraulic Fluid Leak – Piers 51-59

Description: This area is used to moor ships and provide utilities, transfer supplies, and load and unload cargo. The hydraulic fluid leak is located on the dog leg of the pier area near Building 3882.

Date of Start-Up: Start-up information for this area is not available at this time.

Date of Closure: No closure date has been established for the hydraulic fluid leak.

Wastes Managed: The possible hydraulic fluid spill appeared to be red hydraulic fluid.

Release Controls: At the time of the VSI, the hydraulic fluid spill area was covered with a tarp and the area is adjacent to a concrete curb, however, the area is connected to a drain that empties into Little Creek Cove.

History of Releases: Hydraulic fluid may have been released to Little Creek Cove from the hydraulic fluid leak. *References*: 2

Actions Taken: According to the Navy's comments on the Draft RFA, the hydraulic fluid has been cleaned up.

Comments: The Revised RFA states the drippage should be stopped either by ceasing operations or installing proper containment. Absorbent materials should also be added to the leak area, drummed, and hauled away for proper disposal. The Draft Permit states that adsorbent material should be added to the hydraulic fluid leak area. The adsorbent material should then be drummed and properly disposed. This shall be documented in the VI Work Plan. Although no specific records are available concerning the previous disposal of petroleum contaminated soils it was routine practice to sample the soil and dispose of it according to the sample results.

The Revised RFA does not provide a photo of this SWMU. Although the description of the SWMU states the approximate location, it would be extremely difficult to discern the location of the leak since ten years have elapsed since the time of the VSI. Additionally, the Revised RFA does not state where the leak came from. If it was a singular spill or a leak from a portable source it is highly unlikely that the stain or leak will still be present or pose an unacceptable risk to human health or the environment, especially since the Navy reported the area had been cleaned up. In an attempt to locate the SWMU it was visited on October 4, 1993. The leak described in the Revised RFA could not be located.

The site was visited again on May 6, 1999. Digital pictures around Bldg 3882 are available. No staining or evidence of release was present.

Recommendations: Recommend no further action for this SWMU due to the actions taken, the minimal risk due to a one-time spill, and the difficulty of relocating the area.
On May 11, 1999, EPA, DEQ, and the Navy visited the area described. The exact site could not be located and no staining was found. EPA and DEQ agreed that no further action was required (Partnering Team Meeting Minutes May 1999).

SWMU 136 Mobile Diving Salvage Unit II Salvage Area – Piers 51-59

Description: This area is used to moor ships and provide utilities, transfer supplies, and load and unload cargo. The MDSU II Salvage Area is a gravel yard located northwest of Pier 59. Salvaged cables, tanks, and other equipment was normally stored in this area; at the time of the VSI the stored items had been removed to accommodate some nearby construction.

Date of Start-Up: Start-up information for this area is not available at this time.

Date of Closure: No closure date has been established for the MDSU II Salvage Area.

Wastes Managed: The MDSU II Salvage Area (SWMU 136) is used to store salvaged cables, tanks, and other equipment.

Release Controls: No release controls were identified for the MDSU II Salvage Area (SWMU 136).

History of Releases: Soil in the MDSU II Salvage Area is heavily stained with oil.
References: 2

Actions Taken: According to the Navy's comments nts on the Draft RFA, the oil stained soil has been removed.

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine if a release of hazardous constituents has occurred. An appropriate grid system should be constructed to include the visibly stained areas plus an area of several feet around the stained zone. A surface and at least one shallow subsurface soil sample should be collected from each grid and analyzed for VOCs, SVOCs, and oil and grease. The Draft Permit states that soil samples should be taken and analyzed for Volatiles and Semi-Volatiles. The Draft Permit also states that the Permittee has removed the oil stained surficial soils. The VI Work Plan shall contain documentation that the soil has been removed and disposed of properly. Although no specific records are available concerning the previous disposal of petroleum contaminated soils it was routine practice to sample the soil and dispose of it according to the sample results.

A new building (3874) has been constructed over this area since the VSI. The stain depicted in

the VSI photo no longer exists.

The site was visited again on May 6, 1999. No stains or evidence of release was present. The RFA reported that the material in the yard had been moved to accommodate construction. The RFA photo shows that the fence material had just been removed. This construction was most likely the first part of constructing the new building. According to planning records the building was constructed in 1989 and ready for occupation in December 1989.

Recommendations: Recommend no further action for this SWMU due to the actions taken and the location of the new building on top of the site.
On May 11, 1999, EPA, DEQ, and the Navy visited the area described. No staining was found. EPA and DEQ agreed that no further action was required (Partnering Team Meeting Minutes May 1999).

SWMU 138 SEAL Team 4 Satellite Accumulation Area – Building 3806

Description: This area is used to maintain and store boats, weapons, and other material used by Seal Team 4. The satellite accumulation area is located outside of Building 3806. The accumulation area consists of multiple 55-gallon drums on a concrete slab inside a locked fence. The slab runoff collects in a storm drain that flows to Little Creek Channel.

Date of Start-Up: Start-up information for this SWMU is not available at this time.

Date of Closure: At the present time, there are no plans to close these units.

Wastes Managed: The satellite accumulation area is used to store waste fuels, primarily gasoline, prior to off-base disposal.

Release Controls: The satellite accumulation area is located on a concrete slab, however the slab storm water drain is connected to Little Creek Channel.

History of Releases: Stains on the concrete slab for the satellite accumulation area suggest that liquids may have been released to the storm drain. *References*: 1

Actions Taken: According to the Navy's comments on the Draft RFA, the concrete in this area has been removed to allow for new construction. The satellite accumulation area has been relocated away from the storm drain.

Comments: The Revised RFA and Draft Permit suggested that secondary containment be constructed around each unit to prevent surface runoff to the storm sewer drain.

The SEALS now handle their hazardous waste in new state-of-the-art hazardous material trailers. Also, the entire compound is concrete. Exposure to any potentially contaminated soil remaining is highly unlikely.

Recommendations: On April 19, 1999, EPA and DEQ agreed that no further action was required for the soil or groundwater in the area. However, due to reported releases to the storm drain, sediment samples directly under outfalls NR-26A, 33, and 34 (in conjunction with SWMUs 141 and 146) may be required. For each outfall, a total of 6 samples should be collected from 3 locations at two depths, from 0-4" and 12-18", and analyzed for Metals and SVOCs. The three locations should be in the form of a triangle, with one apex directly under the outfall. If rip rap is encountered, the samples should be moved away from the outfall, but not beyond the overhang of the pier. The BTAG may visit the site on August 10, 1999. The recommendation may change slightly as a result of the visit. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000; sampling discussed May 1999).

SWMU 141 SEAL Delivery Vehicle 4 Satellite Accumulation Area – Building 3806

Description: This area is used to maintain boats and other equipment used by Seal Teams. The satellite accumulation area is located outside of Building 3806 in a separate fenced area adjacent to SWMU ?120?. The accumulation area consists of multiple 55-gallon drums on a concrete slab inside a locked fence. At the time of the VSI, some of the drums were open. The slab runoff collects in a storm drain that flows to Little Creek Channel.

Date of Start-Up: Start-up information for this SWMU is not available at this time.

Date of Closure: At the present time, there are no plans to close this unit.

Wastes Managed: The satellite accumulation area is used to store waste paints and thinners prior to off-base disposal.

Release Controls: The satellite accumulation area is located on a concrete slab. However the slab storm water drain is connected to Little Creek Channel.

History of Releases: Stains on the concrete slab for the satellite accumulation area suggest that liquids have been released to the storm drain. Volatile compounds have been released from open drums at the accumulation area. *References*: 2

Actions Taken: According to the Navy's comments on the Draft RFA, the concrete in this area has been removed to allow for new construction. The satellite accumulation area has been relocated in an area away from the storm drain.

Comments: The Revised RFA and Draft Permit suggested that secondary containment be constructed around each unit to prevent surface runoff to the storm sewer drain.

The SEALS now handle their hazardous waste in new state-of-the-art hazardous material trailers. Also, the entire compound is concrete. Exposure to any potentially contaminated soil remaining is highly unlikely.

Recommendations: On April 19, 1999, EPA and DEQ agreed that no further action was required for the soil or groundwater in the area. However, due to reported releases to the storm drain, sediment samples directly under outfalls NR-26A, 33, and 34 (in conjunction with SWMUs 141 and 146) may be required. For each outfall, a total of 6 samples should be collected from 3 locations at two depths, from 0-4" and 12-18", and analyzed for Metals and SVOCs. The three locations should be in the form of a triangle, with one apex directly under the outfall. If rip rap is encountered, the samples should be moved away from the outfall, but not beyond the overhang of the pier. The BTAG may visit the site on August 10, 1999. The recommendation may change slightly as a result of the visit. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000).

SWMU 143 Former Seabee Vehicle Maintenance Facility – CB201

Description: The Former Seabee Vehicle Maintenance Facility was located in Building CB 201. At the time of the VSI, this facility was boarded up and not operating. The records search showed that an oil/water separator and a battery storage room were associated with this facility. Prior to 1980, waste oil may have been poured into a floor drain in Building CB201 that was 4TE connected to an oil/water separator. The separator emptied into a storm sewer and ultimately to Desert Cove. After 1980, used oil was disposed off-base. Disposal practices for spent batteries are unknown prior to 1980 when the Public Works Department began coordinating off-base battery disposal. The file search showed that the concrete floor and the floor drain of the battery storage room were corroded, suggesting that battery electrolyte may have been discharged to the drain which connects to the storm sewer system and empties into Desert Cove. An abandoned gasoline station is also located at Building CB 201. It appears that the tanks for the gasoline station are still in place.

Date of Start-Up: Start-up information for this SWMU is not available at this time.

Date of Closure: This unit was abandoned sometime between 1984 and 1988.

Wastes Managed: Waste oil and spent batteries have been managed at this unit.

Release Controls: No release controls were identified for this unit.

History of Releases: Oil from the oil/water separator and battery electrolyte may have been released to Desert Cove from this unit through the storm sewer system in the past. *References*: 1

Actions Taken: According to the Navy's comments on the Draft RFA, the building was being demolished in late 1988. The underground storage tanks have been removed, (see Appendix C for closure letters for CB201 and CB208. When CB208 was demolished, another tank was discovered and removed. It was assumed at that time the tank was associated with CB201).

Comments: The Revised RFA suggested that shallow subsurface soil sampling be conducted to

determine if releases have occurred. An appropriate grid system should be constructed and soil samples collected and analyzed for pH and semi-volatiles. The Draft Permit states that soil samples should be taken and analyzed for Semi-Volatiles and pH.

While oil and battery electrolyte may have been released to Desert Cove, the VSI did not report any other releases to the environment, soil, or groundwater. The storm drain and oil/water separator are now covered under the HRSD Permit and VPDES Permit.

Recommendations: On April 19, 1999 EPA, DEQ, and the Navy discussed this SWMU. EPA and DEQ agreed that no further action was required for soil or groundwater near the site as long as it could be confirmed that the tanks for the gas station had been properly closed (see Appendix C). However, a review of the storm sewer system in the area was necessary to evaluate potential releases to the Cove. A site visit was conducted by EPA, DEQ, and the Navy on May 11, 1999. Based on the picture for SWMU 143, it was determined that the building in question was CB210, not 201. An apparent catch basin was found southwest of the corner of CB210. The oldest storm water maps (1992-1993) available were inspected to determine the discharge location of the catch basin found. Inspection of the old maps indicated nothing conclusive. However, EPA and the Navy revisited the site and found no evidence of the previous storm drains indicated on the old maps. The storm sewer system appears to have been reworked as a result of the demolitions and the construction of new buildings. The apparent catch basin was actually a water supply shut off valve. Therefore, since there is no storm sewer or catch basin to sample, EPA and DEQ agreed on June 30, 1999 that no further action was required for this SWMU (Partnering Team Meeting Minutes June 1999).

SWMU 146 SEAL Team 2 Material Storage Area – Building 3813

Description: The unit is located near Building 3813. Flammable material containers holding gasoline and other equipment is stored inside a locked fenced area. The equipment is stored on wooden pallets that rest on a concrete surface. The storage area measures about seven feet on a side. Leaks from the tank appear to be routine and systematic.

Date of Start-Up: The start-up date for this unit is not presently available.

Date of Closure: This unit no longer exists.

Waste Managed: The unit stores petroleum fuels in 10 gallon containers for use on the SEAL Team 2 boats. Some oily rags were also observed inside the unit.

Release Controls: The fuels are stored on wooden pallets on a concrete surface of good integrity. The unit has a steel roof, but no walls, other than the steel fence.

History of Releases: Stains were observed on the wooden pallets, the concrete surface, and the grassy area immediately behind the unit. *References*: 2

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine the extent of contamination. An appropriate grid system be constructed

in and several feet around the stained areas. The samples should be analyzed for EP Tox Lead, VOCs, and Semi-Volatiles. The Draft Permit states that soil samples should be taken and analyzed for EP Tox, Lead, VOCs, and Semi-Volatiles.

The SEALS now handle their hazardous waste in new state-of-the-art hazardous material trailers. Also, the entire compound is concrete. Exposure to any potentially contaminated soil remaining is highly unlikely. This site was originally in the Scope of Work for the RRR Sampling event in 1995. Three environmental personnel, including the person who had been at NAB Little Creek the longest and would have been most likely to relocate the site, and two SEAL Team personnel, one of whom had been stationed at the command for the longest time period, tried to relocate the site and could not. The picture taken during the VSI was too close up to identify any currently existing landmarks.

Recommendations: On April 19, 1999, EPA and DEQ agreed that no further action was required for the soil or groundwater in the area. However, due to reported releases to the storm drain, sediment samples directly under outfalls NR-26A, 33, and 34 (in conjunction with SWMUs 141 and 146) may be required. For each outfall, a total of 6 samples should be collected from 3 locations at two depths, from 0-4" and 12-18", and analyzed for Metals and SVOCs. The three locations should be in the form of a triangle, with one apex directly under the outfall. If rip rap is encountered, the samples should be moved away from the outfall, but not beyond the overhang of the pier. The BTAG may visit the site on August 10, 1999. The recommendation may change slightly as a result of the visit. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000).

AOC C Non-PCB Transformer Leak – Building 3661

Description: A non-PCB transformer was observed to be leaking near the PWC Garage at Building 3661. A concrete and asphalt pad immediately below the transformer was stained with oils. The pavement gradually slopes to a grassy area approximately 75 feet away (Ref. 2).

Actions Taken: According to the Navy's comments on the Draft RFA, the leaks caused by the transformer had been cleaned up.

Comments: The Revised RFA erroneously referred to this as a PCB Transformer Leak. The description in section 5 of the RFA was changed. However, the recommendation in section 8 was not changed and still referred to the transformer as PCB-containing. The Revised RFA and the Draft Permit suggested repairing the transformer to prevent further releases. Samples of standing water and scrape samples of stained asphalt or concrete should be collected and analyzed for PCBs.

Recommendations: On April 19, 1999, EPA, DEQ, and the Navy discussed this SWMU. The picture from 1988 showed a yellow sticker on the transformer. Considering that blue stickers were used for PCB-free transformers, there was a concern that this transformer may actually have contained PCBs. If it could be confirmed that the sticker did not indicate PCB content, then it

was agreed that no further action was required.
Several PWC personnel were consulted for this SWMU. The transformer was replaced sometime in late 1988 or 1989. The existing underground primary line was removed. The replacement transformer and primary line were installed in a slightly different location. See Appendix C for the contract plans for the electrical distribution. For disposal purposes, the plans indicated which transformers contained PCBs. The plans did not indicate that this transformer contained PCBs (compare to AOC D). According to the current director of utilities, yellow stickers were used to identify non-PCB and PCB-containing transformers. The specific presence/concentration would be hand written on the label. Therefore, the existence of a yellow sticker on this transformer does not mean that it contained PCBs. Although blue stickers did indicate a PCB-free unit.
The site was visited on May 6, 1999 and the former location of the transformer was located. Digital pictures are available.
Due to the insignificance of the yellow sticker, recommend no further action for this SWMU.
On May 11, 1999 EPA, DEQ, and the Navy discussed this AOC. EPA and DEQ agreed no further action was required (Partnering Team Meeting Minutes May 1999).

AOC D PCB Transformer Leak – Building 3530

Description: A PCB transformer is present near the front walk entrance to the MWR Hobby Shop at Building 3530. The transformer is located at ground level and appears to have leaked some oils, which are contained within a four inch high metal container surrounding the transformer. About one to two inches of liquids (presumably precipitation and oils) were present in the metal pan during the VSI (Ref. 2).

Actions Taken: According to the Navy's comments on the Draft RFA, this transformer has been removed and disposed off base.

Comments: The Revised RFA and the Draft Permit suggested repairing the transformer to prevent further releases. Samples of standing water and scrape samples of stained asphalt or concrete should be collected and analyzed for PCBs.

See Appendix C for contract plans for the electrical distribution. A new PCB-free transformer replaced the PCB-containing transformer in the same location. The site was visited on May 6, 1999. Digital pictures are available. Oil stains were present on the concrete directly below the transformer, but did not extend beyond ~6". The site was visited at 3:00 pm. The area received a very heavy rain at 11:30 am. However, standing water directly east of the pad did not have a sheen. According to PWC personnel, the oil in the transformer is mineral oil, as with all transformers on base. PWC was also aware that this transformer did have a leak in the recent past. It was fixed and the spill was cleaned. However, the oil staining is very difficult to remove from concrete. Annual inspections are completed on all transformers. Any leaks are fixed and cleaned up using degreasers and a vac truck.

Recommendations: Recommend no further action for this AOC due to the following:
1. No releases to the environment were observed during the VSI.
2. The suggested action was to repair the transformer to prevent further releases.

3. The PCB-transformer was removed and disposed off-base.
4. No evidence of release was located in 1993 when the site was revisited.
5. Although a previous leak had occurred, it was cleaned, and there was no evidence of release to the environment.

On May 11, 1999, EPA, DEQ, and the Navy visited this AOC. Two soil samples will be collected from the north and east sides of the transformer from 0-6" and analyzed for PCBs. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000).

AOC E Non-PCB Transformer Leak – Building 3896

Description: A non-PCB transformer is present near Building 3896. Heavy oil stains were present on the concrete and asphalt pad around the unit. The pavement slopes toward Little Creek Cove, which is about 30 feet away. No containment is present for this transformer (Ref. 2).

Comments: The Revised RFA and the Draft Permit suggested repairing the transformer to prevent further releases. Samples of standing water and scrape samples of stained asphalt or concrete should be collected and analyzed for PCBs. This AOC was grouped with PCB-containing transformers for the recommendations.

See Appendix C for contract plans for the electrical distribution. The plans do not indicate that the transformer contained PCBs. The transformer was removed late in 1988 or 1989 and was not replaced. The site was visited on May 6, 1999 and the former location of the transformer was identified. Digital pictures are available. No evidence of release was found around the transformer.

Recommendations: On April 19, 1999, EPA, DEQ, and the Navy discussed this site. It was agreed that as long as the blue sticker shown in the picture from 1988 indicated that the transformer did not contain PCBs, then no further action was required. As described for AOC C, blue stickers did indicate a PCB-free transformer. Therefore, no further action is required for this SWMU.

On May 11, 1999, EPA, DEQ, and the Navy reviewed this AOC and agreed that no further action was required (Partnering Team Meeting Minutes May 1999)..

AOC F Emergency Generator Leak – Pier 59

Description: A leak from an emergency generator at Pier 59 was observed during the VSI. The generator is attached to the front end of a tractor trailer that was placed temporarily at Pier 59. Some adsorbent material had been spread on part of the leak. The leak is only several feet from Little Creek Cove (Ref. 2).

Actions Taken: This trailer was only in temporary use on Pier 59. The trailer has been removed

and the spill has been cleaned up.

Comments: The Revised RFA and Draft Permit state that the emergency generator should be repaired to prevent contamination of the soils/groundwater and surface water.

Recommendations: On April 19, 1999, EPA and DEQ agreed that no further action was required for this SWMU (Partnering Team Meeting Minutes April 1999).

AOC G Emergency Generator Leak – Fire Station Number One

Description: An emergency generator is located at Fire Station 1, near Building 3029. The generator is housed within a roofed shed with three sides. It rests on a concrete pad of good integrity. Heavy oil stains were observed on the concrete pad away from the enclosed area. Precipitation could wash the oils to grassy areas several feet away (Ref. 2).

Comments: The Revised RFA and Draft Permit state that the emergency generator should be repaired to prevent contamination of the soils/groundwater and surface water.

This SWMU no longer exists. The area where building 3029 (Fire Station number 1) was located is now an open field. The generator has been removed and there is no evidence of any oil staining.

Recommendations: On April 19, 1999, EPA and DEQ agreed that no further action was required for this SWMU (Partnering Team Meeting Minutes April 1999).

8 - FURTHER INVESTIGATION RECOMMENDED

The following SWMUs are recommended for further investigation, as detailed below.

SWMU 13 Former Pesticide Shop – Building 3360-3

Description: According to the Revised RFA, the former pesticide shop was located in Building 3360-3, near Building 3166 and the intersection of 6th and F Streets. However, according to PWC personnel, the shop was actually in building 3170, which is in the vicinity reported in the Revised RFA, just a different building number. See figure for location. The shop managed and applied pesticides at the base. Since the change from the Navy to contractor pest control at NAB Little Creek in 1980, there has been no storage or mixing of pesticides by PWC (MWR still handles pesticides for the golf course, see AOC H). The pesticide materials that remained at the time of the changeover were transferred to the Pesticide Shop at Naval Air Station, Oceana. The site is now a paved parking lot.

Hand-held sprayers were reportedly rinsed daily after their use was completed and between mixtures of different pesticides if they occurred on the same day. Empty pesticide containers were triple-rinsed at this unit and disposed of with the other general solid waste in base landfills (SWMUs 24, 25, 26, 123). Metal containers were triple rinsed and then punctured or crushed to prevent reuse before disposal.

Date of Start-Up: Operations were initiated at the pesticide shop in 1973.

Date of Closure: Operations at the pesticide shop ended in 1980, after which the building was razed.

Wastes Managed: Pesticide application was done by tank sprayers and hand-held sprayers. The mixed pesticides were usually completely used at the job site. Residue in tank sprayers was either left in the tank until the next job or diluted with rinse water and left in the tank to mix with the next application. Types of pesticides previously used in the shop between 1981 and 1982 are listed below (the following table was in the RFA. It may represent data from the shop at Oceana, which NAB's program transferred to):

	Pounds Formulated		
Pesticide	1980	1981	1982
Abate (Insect)	312	60	20
Anticoagulant (Rodent)	178	224	368
Baygon (Insect)	5,619	7,730	8,092
Diazinon (Insect)	38,352	74,160	71,460
Dursban (Insect)	2,424	890	--
Mineral Oils (Insect)	1,277	524	900
Naled (Insect)	1,207	251	470
Other Carbamate (Insect)	3,456	384	--

Pyrethrum (Insect)	55	--	--
Silica Aerogel (Insect)	--	90	170
TOTAL	52,880	84,313	81,480
TOTAL #, Active Ingredient	1,556	982	1,259

Release Control: The types of release controls (if any) for this unit are not currently available.

History of Releases: The former pesticide shop site is presently covered by a paved parking lot. No releases were observed during the VSI. However, no formal closure or follow-up sampling was conducted at the time the unit was razed. *References*: 1, 2

Comments: The Revised RFA suggested the facility provide documentation on demolition procedures. If deemed necessary after review of these procedures, shallow subsurface soil sampling should be conducted around the building perimeter and surrounding areas to determine if residual contamination exists. An appropriate grid system should be constructed and soil samples should be analyzed for pesticides. The Draft Permit states that soil samples should be taken and analyzed for Pesticides. Photos were taken of this area and can be compared to the VSI photo.

Recommendations: Recommend that limited soil and groundwater screening sampling be conducted at this SWMU for the following reasons:

1. No releases or staining were identified during the VSI
2. As part of the IR Program, groundwater sampling has been conducted in the area and low concentrations (one order of magnitude below the Tap Water RBC) of DDD and Chlordane were detected.
3. The scope of sampling should not require installation of wells beyond those already present for IR Site 13. The analysis of Pesticides in groundwater samples from existing wells in the area may be easily accomplished during the next sampling round for Site 13.

On January 27, 1999, EPA, DEQ, and the Navy discussed this site. It was agreed that further investigation was required, although no specific priority or timeline was assigned. In March 2000 the Navy, EPA, and DEQ addressed this SWMU for work to be performed and referenced as a Site Screening Area in Section X and Appendix A of the FFA.

New SWMU 2 (SWMU 105/2) Steam Plant Flyash Silo – Building 757

Description: The steam plant is housed in Building 757 between Murray Road and Amphibious Drive. The plant has provided steam heat to NAB since 1956. From 1956 to 1969 the steam plant burned approximately 40,000 to 45,000 tons of coal per year. In 1969, the plant switched to Burning No. 6 diesel oil (approximately 6 million gallons/ year). The plant switched back to coal in 1983. Collected flyash is transferred by a conveyor belt to the flyash silo. Flyash is removed through a duct at the bottom of the flyash silo (SWMU 105) to a truck parked over a concrete slab with a french drain (SWMU 106) beneath the flyash silo (SWMU 105). The ash is then taken off-site for recycling. Prior to 1969, the ash was disposed in the Amphibious Base Landfill (SWMU 123). Bottom and Flyash production averages about 2500 tons per year from a

total of 35,000 tons of coal burned. Coal use and ash production are reduced in the summer.

Date of Start-Up: Operation of the steam plant began in 1956.

Date of Closure: The steam plant will be phased over to natural gas within the next five years.

Wastes Managed: Flyash.

Release Controls: The silo is an enclosed structure and the ash transfer duct is angled.

History of Releases: Flyash from the transfer duct associated with the silo has probably been carried to nearby soils by the wind; flyash may also have been dispersed to nearby soils during transfer of the ash to trucks. *References*: 1, 2

Actions Taken: From October 25-31, 1995 this site was sampled for Relative Risk Ranking using DOD's model. Three surface soil and one groundwater sample were collected and analyzed for TAL Metals. See the figure for SWMU and sampling locations. The following table lists the compounds detected. As a result of the sampling, the site was ranked with a high relative risk and renumbered to SWMU 2.

1995 Relative Risk Ranking Sampling Results

SWMU 105	LC06-S1	LC06-S2	LC06-S3	LC06-W1
METALS (mg/kg, µg/L)				
Aluminum	779	820	1070	13300
Antimony	1.1 BN	0.9 BN	0.89 BN	ND
Arsenic	ND	ND	3.4	14.5
Barium	3.4 B	4.7 B	30.8 B	61.1 B
Beryllium	ND	0.36 B	0.35 B	2.4 B
Cadmium	ND	ND	ND	1.6 B
Calcium	75 B	147 B	617	24800
Chromium	2.6	3.2	3.8	33.1
Cobalt	1 B	0.37 B	0.91 B	14.7 B
Copper	4.2 B	11.3	4.3 B	13.4 B
Iron	1340	1380	2350	17900
Lead	5.1	3.9	5.3	28.8
Magnesium	122 B	127 B	234	5420
Manganese	10.1	4.2	12.2	153
Nickel	9	6.8 B	16	279
Potassium	242	239	189 B	9830 E
Selenium	ND	ND	0.44 B	6.2
Silver	0.4 B	0.41 B	ND	ND
Sodium	24 B	23.8 B	39.6 B	11600 E
Vanadium	2.6 B	10.9 B	8 B	202
Zinc	14.8	12.9	21.9	156

Comments: The Revised RFA suggested that surface soil sampling be conducted to determine the

extent of contamination in the area of the unit. An appropriate grid system should be constructed. One soil sample per grid should be collected and analyzed for Metals. The Draft Permit states that soil samples should be taken and analyzed for Metals.

A Steam Plant Operator who has worked at the steam plant for over 25 years stated that there has never been a conveyor belt associated with the flyash silo. It is a closed system that operates due to a vacuum. Prior to being transferred to trucks for off site disposal, the flyash is wetted with internal spray nozzles.

Recommendations: On January 27, 1999, EPA, DEQ, and the Navy discussed this site. It was agreed that further investigation, or limited removal action may be necessary.
The Scope of Work for a Site Investigation will be discussed during the August, 1999 Partnering. The Navy, EPA, and DEQ discussed this SWMU in April 2000. Because the site is active this SWMU will be addressed as work to be performed under Section X and Appendix B of the FFA.

New SWMU 3 (SWMU 111/3) Pier 10 Sandblasting Yard

Description: From 1962 to 1984, SWMU 111, the Pier 10 sandblasting yard, was used to sandblast boats. From 1984 to 1995 the area was used to sandblast anchors and anchor chains. Grit and paint chips cover the unpaved area to the water's edge and the nearshore bottom of Little Creek Channel. In 1982, a fence was installed around the perimeter of the sandblasting area to reduce the amount of grit reaching the water. Sandblasting residue is removed from the area by the PWC for off-site disposal. The residue is tested for EP toxicity prior to disposal.

Date of Start-Up: Start-up information for these units is not available at the present time.

Date of Closure: All blasting activity was moved to a new indoor facility in 1996.

Wastes Managed: Sandblasting residue containing grit and paint chips is managed in SWMU 111, the Pier 10 sandblasting yard. The sandblasting residue has been tested for EP Toxicity. Results have indicated that the residue is not hazardous.

Release Controls: A fence has been installed around the perimeter of the Pier 10 sandblasting yard to reduce the amount of sandblasting residue entering Little Creek Channel.

History of Releases: The sandblasting residue is lying directly on the ground surface. According to facility personnel, EP toxicity tests from some of the residue indicated the material was not hazardous. *References*: 1, 2

Comments: The Revised RFA suggested that soil sampling be conducted to determine the extent of contamination. An appropriate grid system should be constructed with at least one sample collected per grid and analyzed for metals and pH. A cover should be placed over all residue to preclude future wind dispersal of the wastes. The Draft Permit states that soil samples should be taken and analyzed for pH and Metals.

On September 30, 1993 photos were taken to compare with the VSI photo. Most of the area has been covered with asphalt. Sampling was completed as part of the RRR Sampling in 1995. As a result of the sampling, the site was ranked with a high relative risk. The SWMU was renumbered to SWMU 3.

Recommendations: A Site Investigation was completed September 1998. The Draft Final Site Investigation Report was completed in July, 1999. The results will be reviewed with EPA and DEQ during the August, 1999 Partnering. Further actions will be taken as necessary. In January 2000 the Navy, EPA, and DEQ addressed this SWMU for Work to be Performed (Section X of the FFA) and referenced in the Findings of Fact of the FFA.

IR Site 6 (SWMU 117/4) Special Boat Unit 2 Battery Storage Area – Building 103

Description: The SBU battery storage area (SWMU 117) is located on the southeast corner of Building 103. Prior to off-site disposal spent lead-acid batteries containing electrolyte were stored outside Building 103 on wooden pallets over soil. At the time of the VSI, no batteries were in storage. In the past, the storage area was much larger. From 1943 until 1980, an area of about 300 - 400 square feet, located west of Schofield Avenue and about 100 feet south of Pier 2, was used to store batteries. Painting wastes, oily wastes, and scrap metal were also stored at the unit on wooden pallets over soil. Note: Pier 2 refers to flotilla piers present in the SBU compound prior to the permanent piers 60 and 61 being built. Therefore, the location of this site is 100 feet south of Pier 61. See Appendix D for *Notification of Hazardous Waste Site* documentation for location of the battery storage area and documentation of Pier 2 being renamed to Pier 61.

Date of Start-Up: Batteries have been stored in this area since 1943.

Date of Closure: SBU now stores batteries inside Building 103.

Wastes Managed: Spent batteries containing lead and sulfuric acid are stored at this unit. Painting wastes, oily wastes, and scrap metal are also stored at this unit.

Release Controls: No release controls for this unit were identified.

History of Releases: There were stains on the pallets, and oil stains on the soil during the VSI. File material indicates that in the past, batteries have ruptured during the winter due to freezing and that electrolyte has been released to the soil. *References*: 1, 2

Actions Taken: On October 19, 1995 excavation activities east of the new building 115 uncovered oil contaminated soil. Two soil and one groundwater sample were collected and analyzed for VOCs, SVOCs, TAL Metals, and Pest/PCBs. The apparent release was reported to the DEQ. The results were compared to TCLP and RBC limits and the soil and groundwater were found not to be hazardous. The Navy considered the site closed with no action required.

DEQ agreed. See Appendix D for the correspondence, sample results, and sampling location map.

From October 25-31, 1995 this site was sampled for Relative Risk Ranking using DOD's model. Two surface soil and one groundwater sample were collected and analyzed for SVOCs and TAL Metals. See the figure for SWMU and sampling locations. The following table lists the compounds detected. As a result of the sampling, the site was ranked with a medium relative risk and renumbered to SWMU 4.

1995 Relative Risk Ranking Sampling Results			
SWMU 117	LC09-S1	LC09-S2	LC09-W1
SEMIVOLATILES (µg/kg, µg/L)			
Phenanthrene	ND	5 J	ND
Anthracene	ND	4 J	ND
Fluoranthene	ND	16 J	ND
Pyrene	8 J	28 J	ND
Benzo(a)anthracene	ND	9 J	ND
Chrysene	ND	14 J	ND
Benzo(b)fluoranthene	ND	30 J	ND
Benzo(k)fluoranthene	ND	21 J	ND
Benzo(a)pyrene	13 J	37 J	ND
Benzo(g,h,i)perylene	24 J	ND	ND
METALS (mg/kg, µg/L)			
Aluminum	910	2220	7820 E
Antimony	1.2 BN	1.1 BN	6.1 B
Arsenic	1.3 B	1.2 B	ND
Barium	5.4 B	22.1 B	61.8 BE
Cadmium	0.24 B	0.35 B	ND
Calcium	343	826	18200
Chromium	6	6.7	15.6
Cobalt	0.3 B	1.1 B	3.8 B
Copper	4.5 B	8	11 B
Iron	2360	3790	8550 E
Lead	42.6	23.7	414
Magnesium	248	562	2730 E
Manganese	11	51.9	52.8 E
Nickel	1.6 B	2.7 B	9.5 B
Potassium	335	420	4020 E
Selenium	ND	0.8 B	ND
Silver	0.22 B	ND	ND
Sodium	31.2 B	30.8 B	12000
Vanadium	3.7 B	6.2 B	16.1 B
Zinc	24.8	59.2	109 E

Comments: The Revised RFA suggested that surface and shallow subsurface soil sampling be conducted to determine if releases have occurred. An appropriate grid system should be

constructed. Soil samples should be collected from each grid and analyzed for pH and Lead. The Draft Permit states that soil samples should be taken and analyzed for pH and Lead.

The VSI photo on page 205 refers to this photo as SWMU 117. It is a photo taken in the SIMA area. The area around Building 103 was visited on October 6, 1993. No pallets or oil stains were observed around the building.

This site is a part of the IR Program (Site 6). The IAS stated that the relative mobility of battery electrolytes in sand and gravel and the close proximity to Little Creek Cove suggests that migration of this acid pollutant has already reached the surface water and has been diluted and dispersed. No confirmation or mitigating actions were recommended for this Site.

Recommendations: On January 27, 1999, EPA, DEQ, and the Navy discussed this site. It was agreed that further investigation was required. However, due to other higher site priorities (SWMUs 2, 137/7, and 144/8), it was not investigated in FY99. Pending budget approvals, it may be investigated in FY00. In March 2000 the Navy, EPA, and DEQ addressed this SWMU for work to be performed and referenced as a Site Screening Area in Section X and Appendix A of the FFA.

New SWMU 5 (SWMU 130/5) Port Ops Boat Painting Area – Building 3896

Description: Port Ops, Building 3896, houses the engine overhaul shop for a boat maintenance area. Boat bilges are emptied of residual bilge water, hulls are ground by hand and painted, and engine maintenance is performed in this area. At the Boat Painting Area grinding and painting of boats elevated on stands occurs. Grindings and paint fall on the soil beneath the stands.

Date of Start-Up: Start-up information for this SWMU is not available at this time.

Date of Closure: The work area for this unit was covered with asphalt in 1994. A MILCON is scheduled to demolish all the buildings and relocate them on the West Annex. The boat painting activity will move at the same time.

Wastes Managed: Metal grindings and paint overspray fall on the soil at SWMU 130.

Release Controls: No release controls were identified for this unit.

History of Releases: Releases of bilge water, metal grindings, paints, and paint thinners to the soil have occurred at the boat painting area. *References*: 2

Actions Taken: From October 25-31, 1995 this site was sampled for Relative Risk Ranking using DOD's model. Three surface soil samples were collected and analyzed for VOCs, SVOCs, and TAL Metals. See the figure for SWMU and sampling locations. The following table lists the compounds detected. As a result of the sampling, the site was ranked with a medium relative risk and renumbered to SWMU 5.

1995 Relative Risk Ranking Sampling Results				
SWMU 130	LC13-S1	LC13-S2	LC13-S3	LC13-W1
VOLATILES (µg/kg, µg/L)				
Acetone	ND	ND	ND	55
Chloroform	4 J	4 J	4 J	ND
SEMIVOLATILES (µg/kg, µg/L)				
Diethylphthalate	ND	ND	ND	1 J
Naphthalene	ND	8 J	ND	ND
2-Methylnaphthalene	ND	7 J	ND	ND
Acenaphthylene	ND	160 J	ND	ND
Acenaphthene	ND	32 J	ND	ND
Dibenzofuran	ND	12 J	ND	ND
Fluorene	ND	39 J	ND	ND
Phenanthrene	ND	340 J	ND	ND
Anthracene	ND	310 J	ND	ND
Carbazole	ND	210 J	ND	ND
Fluoranthene	ND	770	ND	ND
Pyrene	5 J	920	10 J	ND
Benzo(a)anthracene	ND	540	ND	ND
Chrysene	ND	720	ND	ND
Benzo(b)fluoranthene	ND	1800	ND	ND
Benzo(k)fluoranthene	ND	950	ND	ND
Benzo(a)pyrene	8 J	900	17 J	ND
Indeno(1,2,3-cd)pyrene	ND	200 J	10 J	ND
Dibenz(a,h)anthracene	ND	30 J	ND	ND
Benzo(g,h,i)perylene	ND	40 J	ND	ND
METALS (mg/kg, µg/L)				
Aluminum	396	1800	1080	195000
Antimony	1.3 BN	1.4 BN	ND	5.7 BN
Arsenic	ND	ND	ND	112
Barium	3 BN	12.3 BN	4.1 BN	366
Beryllium	ND	0.31 BN	0.24 BN	4.5 B
Calcium	126 B	231 B	154 B	66200
Chromium	1.8 BN	4.5 N	2.5 N	226
Cobalt	ND	0.46 BN	0.68 BN	50.3
Copper	1.6 B	5.7 B	1.1 B	128
Iron	792	3110	1740	170000
Lead	4	14.9	3.1	94.2
Magnesium	72.4 B	255 B	205 B	21100
Manganese	6.2	29.2	36.1	526
Mercury	ND	ND	ND	0.94 BN
Nickel	1.4 BN	4.3 BN	1.8 BN	115
Potassium	60 B	150 B	121 B	21400 E
Selenium	ND	ND	ND	17.1
Silver	0.72 BN	ND	ND	ND

Sodium	34.1 B	72 B	50.7 B	22300
Vanadium	1.4 BN	11.6 BN	2.9 BN	313
Zinc	9.8	49.2	14	282

Comments: The Revised RFA suggested that soil sampling be conducted to determine the extent of contamination. An appropriate grid system should be constructed with at least one sample collected per grid and analyzed for metals and pH. A cover should be placed over all residue to preclude future wind dispersal of the wastes. The Draft Permit states that soil samples should be collected and analyzed for Metals and pH.

Recommendations: On March 10, 1999, EPA, DEQ, and the Navy visited this SWMU. It was agreed that further investigation was required. However, due to other higher priority sites (SWMUs 2, 4, 137/7, and 144/8), it was not investigated in FY99. Pending budget approvals, it may be investigated in FY00.
On May 10, 1999, EPA, DEQ, and the Navy discussed the proposed demolition of all buildings in this area. After comparing the sampling results above to industrial soil RBCs, it was agreed that no special precautions were needed for the demolition, besides standard Level D protection for the workers. However, contact with groundwater should be minimized. In March 2000 the Navy, EPA, and DEQ addressed this SWMU for work to be performed and referenced as a Site Screening Area in Section X and Appendix A of the FFA.

New SWMU 7 (SWMU 137/7) Small Boats Sandblast Yard – Piers 51-59

Description: This area is used to moor ships and provide utilities, transfer supplies, and load and unload cargo. The Small Boats Sandblast Yard (SWMU 137/7) was used to sandblast and paint ships.

Date of Start-Up: Start-up information for this area is not available at this time.

Date of Closure: All blasting activity on base was moved to an indoor facility by 1996.

Wastes Managed: The small boats sandblast yard was used to store spent sandblast grit while awaiting EP toxicity test results. Approximately 4,000 cubic yards of grit from sandblasting conducted between the 1960s and 1982 were stored in the yard at the time of the VSI. Two apparently abandoned drums near Building 3878 were observed in the small boats sandblast yard during the VSI. One drum was marked "contaminated". Since the VSI a new building was constructed to perform all blasting inside. The grit present from previous activities was sampled, removed, and disposed appropriately. Based on photos found in the files, the grit pile was in the existing compound used for the new blasting area.

Release Controls: No release controls were identified for this unit.

History of Releases: Releases of spent grit and oily substances to soil and Desert Cove have occurred in the small boats sandblast yard. *References*: 2

Actions Taken: According to the Navy's comments on the Draft RFA, the oil stained soil has been removed. The description provided above is very poor. Piers 51-55 are small boat piers in Desert Cove. However piers 56-59 are in Little Creek Cove and are NOT used for small boats. However, an area near Desert Cove was identified in the IAS as a Sandblast Disposal Area (IR Site 2). It is believed that SWMU 137/7 and the Desert Cove Sandblast Area are the same. Other areas in the west annex were also identified as sandblast areas as part of IR Site 2. The other areas will be SWMU 144/8 and SWMU 111/3. See the figures for location. An area west of Building 3869 on the north side of Desert Cove also may have been used for sandblasting operations.

The southwestern area indicated for SWMU 137/7 was the site of the new blast paint facility, CB125. Prior to construction of the building, LANTDIV contracted with ATEC Environmental to conduct a soil and groundwater investigation. Nine soil samples were collected on July 24, 1989, see figure for location. Five locations were sampled. At boring numbers B-1, B-2, and B-3, two composite samples were collected from 0-2.5' and 2.5-5.0', labeled A and B respectively. At boring locations B-4 and B-5, composite samples were collected from 0-2.5'. A duplicate was obtained from B-2B and was labeled B-2C. A sample of the rinse water was labeled R-1, and the rinsate from the equipment R-2. The samples were analyzed for total metals and EP Tox metals. Although the full results are available for the total metals, the EP Tox results have been lost. However, ATEC stated in their summary report that the only metal detected above the MDL in the EP Tox was zinc at 3.4 mg/L at B-1A. In January 1993, three soil and three groundwater samples were collected. These samples were analyzed for TCLP Metals. No information is available on the depth of collection. The groundwater samples were collected from wells installed for the project. See the figure for location. A base map from 1989 is also included to show perspective for the sampling maps. The table below summarizes all the results available. As shown by the results from the Total Metals, the soil sampled did not contain elevated levels of metals as would be expected from sandblasting activity. These samples were taken directly below the new building. Therefore, the soil under the building may not be a leaching risk for groundwater in the future.

SWMU 137/7 Soil Sampling 1989

	Soil Borings - mg/kg MDL = 1.0									Water-mg/L	
Total Metals	1A	1B	2A	2B	2C	3A	3B	4A	5A	R-1	R-2
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	1.0	ND	ND
Barium	11	13	8.7	3.5	6.1	18	10	7.3	16	ND	0.80
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	.026
Chromium	12	12	8.4	2.7	5.4	15	7.5	4.1	13	ND	0.19
Lead	98	45	94	8.3	9.4	75	4.2	13	96	ND	0.65
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper	41	23	24	2.9	3.0	27	3.6	8.2	61	ND	0.37
Nickel	4.8	4.1	2.9	1.8	2.6	9.2	5.4	1.6	7.5	ND	0.22
Zinc	110	280	44	3.3	2.9	55	14	19	80	ND	0.73

SWMU 137/7 Soil and Groundwater Sampling 1993

All mg/L	Soil			Groundwater			
TCLP Metals	MWS-1	MWS-2	MWS-3	MW-1	MW-2	MW-3	MDL
Arsenic	ND	0.057	ND	0.287	0.111	0.198	0.002
Barium	ND	ND	ND	ND	ND	ND	0.150
Cadmium	ND	ND	ND	ND	ND	0.016	0.010
Chromium	ND	ND	ND	ND	ND	ND	0.033
Lead	ND	ND	ND	ND	ND	ND	0.099
Mercury	ND	ND	ND	ND	ND	ND	0.0002
Selenium	0.02	0.476	0.449	ND	ND	ND	0.002
Silver	0.045	ND	ND	ND	ND	ND	0.016

The Desert Cove Sandblast Area was visited in February 1999. Several holes were dug in order to assess the existence of black beauty in the soil. See Appendix D for detailed results. Black beauty was present in the compound near CB125. Limited evidence of black beauty was also found near CB317 and CB318. A very small area of black beauty was also found west of 3869. Although the maps for IR Site 2 indicated that black beauty storage was all along the Cove shoreline, this is highly unlikely. Storage was probably limited to the areas where sandblasting occurred. No evidence of black beauty was found in the other areas.

Comments: The Revised RFA suggested that soil sampling be conducted to determine the extent of contamination. An appropriate grid system should be constructed with at least one sample collected per grid and analyzed for metals and pH. A cover should be placed over all residue to preclude future wind dispersal of the wastes. The Draft Permit states that the Permittee has removed the oil stained surficial soils. The VI Work Plan shall contain documentation that the soil has been removed and disposed of properly. Although no specific records are available concerning the previous disposal of petroleum contaminated soils it was routine practice to sample the soil and dispose of it according to the sample results.

Recommendations: Recommend collection of surface and subsurface soil samples and analysis for Metals. The presence/depth of sandblast material (black beauty) should be noted for each soil core.
On March 10, 1999, EPA, DEQ, and the Navy visited these areas. Due to the potential risk from exposed black beauty, it was agreed that this SWMU would be elevated in priority and investigated in FY99.
The Scope of Work for a Site Investigation will be discussed during the August, 1999 Partnering. In March 2000 the Navy, EPA, and DEQ addressed this SWMU for work to be performed and referenced as a Site Screening Area in Section X and Appendix A of the FFA. A site investigation was conducted in June 2000, results will be presented in a Site Screening Process Report in the Fall 2000.

New SWMU 8 (SWMU 144/8) West Annex Sandblasting Area

Description: The vacant lot west of the ACU2 area in the West Annex was previously used for sandblasting activities. Boats were hauled up into this area and paint was removed by sandblasting. The residue accumulated on the ground. Between 1949 and 1954, sandblasting and

residue disposal occurred in the shaded areas on each side of Guadalcanal Road. From 1954 to 1971, the operations shifted to another area. The average thickness of residue remaining at the location near watertower 1553 in 1988 was about four inches.

Date of Start-Up: The unit began operating in 1949.

Date of Closure: The sandblasting/disposal operations ceased in 1971.

Waste Managed: The unit accepted paint residue from boats and sand from the sandblasting operations. Between 1949 and 1954, 5,125 cubic yards of residue was disposed. The waste disposal rate dropped off between 1954 through 1971, with only an additional 3,525 cubic yards of residue being disposed.

Release Controls: No release controls have been identified for this unit.

History of Releases: The residue was disposed directly on the ground surface and was not covered. Periodically, the residue was removed and disposed off-base. *References*: 1, 2

Actions Taken: The description provided above is very poor. However, several areas in the West Annex were identified in the IAS as a Sandblast Disposal Area (IR Site 2). It is believed that SWMU 144/8 may part of IR Site 2 in the west annex. SWMU 111/3 is the remaining area identified in the IAS. See the figures for location.
The SWMU 144/8 areas were visited in February 1999. Several holes were dug in order to assess the existence of black beauty in the soil. See Appendix D for detailed results. The area near watertower 1553 contained the most black beauty in the soil. Black beauty was present on the surface and down to ~5". A very clear boundary existed between the black beauty and clean sand underneath. No evidence of black beauty was found in the other areas.

Comments: The Revised RFA suggested that soil sampling be conducted to determine the extent of contamination. An appropriate grid system should be constructed with at least one sample collected per grid and analyzed for metals and pH. A cover should be placed over all residue to preclude future wind dispersal of the wastes. The Draft Permit states that soil samples should be taken and analyzed for Metals and pH.

Recommendations: Recommend collection of surface and subsurface soil samples and analysis for Metals. The presence/depth of sandblast material (black beauty) should be noted for each soil core.
On March 10, 1999, EPA, DEQ, and the Navy visited these areas. Due to the potential risk from exposed black beauty, it was agreed that this SWMU would be elevated in priority and investigated in FY99.
The Scope of Work for a Site Investigation will be discussed during the August, 1999 Partnering.
In March 2000 the Navy, EPA, and DEQ addressed this SWMU for work to be performed and referenced as a Site Screening Area in Section X and Appendix A of the FFA. A site investigation was conducted in June 2000, results will be presented in a Site Screening Process Report in the Fall 2000.

AOC H Pesticide Mixing Area – Buildings 3109 and 3630

Description: Pesticides are stored in Building 3630 and mixed in Building 3109. They are then applied to the golf course. There is the possibility that pesticide spills have occurred in the mixing area (Ref. 1).

Comments: The Revised RFA suggested that surface soil sampling be conducted to determine if residual contamination exists. An appropriate grid system should be constructed around Building 3109. Samples should be analyzed for pesticides. The Draft Permit states that soil samples should be taken and analyzed for PCBs. The statement in the Draft Permit may have been in error. There is no evidence that PCBs have been used or may have been released in this area.

Recommendations: Recommend the collection of surface and subsurface soil samples and analysis for pesticides.
On January 27, 1999, EPA, DEQ, and the Navy discussed this site. It was agreed that further investigation was required, although no specific priority or timeline was assigned. In March 2000, EPA, DEQ, and the Navy agreed that this SWMU would be addressed in Appendix B of the FFA (Partnering Team Meeting Minutes March 2000).

9 - REFERENCES

As appeared in the Revised RFA

1. Initial Assessment Study of Naval Amphibious Base, Little Creek, Norfolk, Virginia, Prepared for Naval Assessment Control of Installation Pollutants Department by Roger, Golden, and Halpern, December 1984.

2. Visual Site Inspection Logbook, notes taken by the Earth Technology Corp. Team, June 27-July 1, 1988.

3. CH2M HILL Round 1 Final Progress Report for Atlantic Division, Naval Facilities Engineering Command, October 15, 1986. (Round 1 Verification Study)

4. Solid Waste Management Unit Identification Letter. From J. Sabbatini, Commander, CEC, USN to Mr. Stephen Wassersug, Director EPA, Region III, April 7, 1986.

5. Phase I LUST Study Final Report, Prepared for naval Facilities Engineering Command, Gerraghty and Miller, Inc., October 1987.

11. Letter, 1/23/89, from P.A. Canady, Department of the Navy, to U.S. EPA, Region III, with Comments on the RFA for Naval Amphibious Base, Little Creek, Norfolk, VA.